

Berlin Wall design ideas competition launched

THE Berlin Wall is the subject of an international design competition, with the winning entries to be exhibited as part of the city's 750th anniversary celebrations next year.

Architects, planners and artists are invited to submit their ideas for the "careful urbanisation" of the infamous structure, with the suggestion that they concentrate on the middle 46km stretch which separates the two city centres.

Detailed plans and/or small models can be submitted and the organisers, Mythos Berlin Exhibition with the magazine *Aesthetics and Communication*, ask entrants to consider any aspects

By BD Reporter

of the wall, technical, historical or cultural, that interest them. Three winners will receive 1000DM each and silkscreen posters of their entries will

feature in the exhibition "Transit Berlin-Europe" which will tour Europe in 1989.

The best 12 will be shown in the Mythos Berlin exhibition next year on the site of the former Anhalter Station near the 25-year-old wall.

The competition jury includes Ron Koolhaas, Julius Posener, Wolfgang Peint, Friedrich Achleitner and Vittorio Lampugnani.

Registrations should initially be made by November 30,

enclosing 20DM for the brief, to Jan Laessig, Mythos Berlin Ausstellung, Tempelhofer Ufer 22, D-1000 Berlin 61. Entries must be submitted by December 31.

● Liverpool's very own "Berlin Wall", in Byron Street, will be pulled down before it's even completed.

The offending wall was being built as part of a major road development. This is now being redesigned.

Rio gets more sparkle

Hackney's very own community cinema, The Rio in Kingsland High Street, just had a complete facelift; there are plans to extend the rear of the building. The interior is being redecorated and the exterior is being redecorated. The Rio is a revived addition to the area.

Whitechapel plans submitted to council

THREE of the groups competing to develop a 6.8ha site in Whitechapel have submitted detailed proposals to Tower Hamlets council. Four developers were shortlisted in January from more than 20 proposals, but the Carroll Group with architect The Bernard Engle Partnership has now withdrawn.

A local community group, the Tower Hamlets Environment Trust, has compiled a scheme with Inner City Enterprises plc, the private sector agency set up to help tackle problem sites. Their £45 million plan designed by Combell Zogolovich

BUILDING DESIGN

BRICK SUPPLEMENT

SEPTEMBER 1986

Inside People

BDA chairman Graham Thompson talks about his second term in office. Page 6.

Mortars

A look at how special mortars have developed in recent years. Pages 8-9.

Art

We report on sculptor Walter Ritchie's latest major work in brick. Page 10.

Awards

The winners of this year's BDA Structural Brickwork Awards. Pages 18-19.

Plant

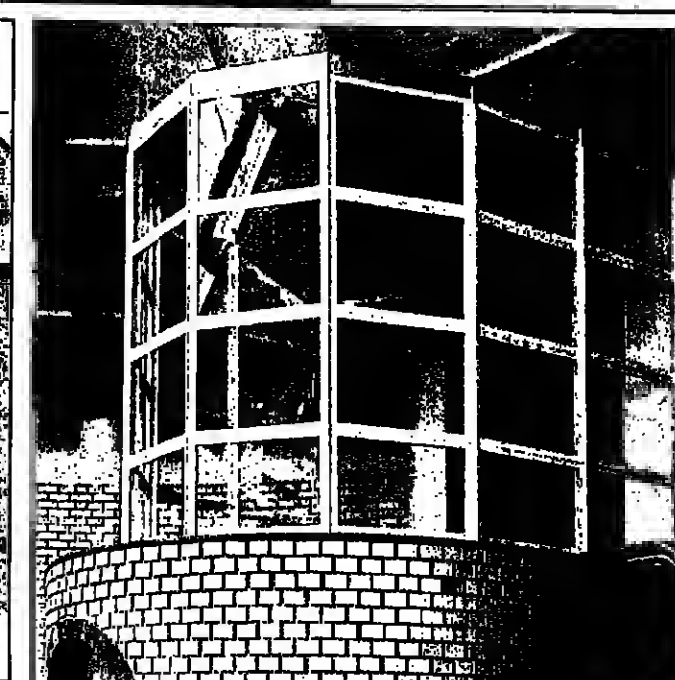
The trend towards high levels of investment in new plant looks set to continue. Page 22.

Plus

News 2-5 and 28. Products 23-26. Technical literature 27.



Winners — above, Norwich Magistrates' Court and right, Preston Dock locomotive shed.



STRUCTURAL BRICK AWARDS ANNOUNCED

TWO schemes share this year's Brick Development Association structural design awards.

They are a locomotive shed for the Preston Dock railway system (architects Brock Carmichael, structural engineer Roger Heilington) and the new Norwich Magistrates Court (architects Norfolk County Council, structural engineers Eagling & Allen).

There is also a highly commended scheme, as well as two commended schemes (see pages 18-19).

Out of 34 entries submitted this year, the team of assessors

narrowed the field to 11, all of which were visited.

Top of the assessors' list of priorities was that the winning entries should demonstrate a fusion of architectural and structural excellence.

Entries varied from civil engineering structures, such as

retaining walls, through predominantly single-space structures like swimming pool buildings and gymnasiums, to large civic buildings, such as the Norwich court building.

Many entries were eliminated because they relied on other materials to provide the main structural strength — block-

work, steelwork or reinforced concrete.

Commenting on the impressions of the assessors, Donald Foster said that as well as looking for good examples of brickwork used as a structural material, the assessors had insisted that the winning buildings demonstrated a high standard of brick detailing.

They noted with pleasure a widening use of arches and different coloured brickwork.

There were, however, signs that some designers were still failing to control rainwater flow sufficiently, resulting in stained facades.

Also, insufficient consideration was often given to thermal and moisture movement.

By Paul Marsh

Supplement credits

THIS special supplement has been prepared for *Building Design* by Paul Marsh, with the aid of sponsorship from the Brick Development Association.

Computers help on brick design

STEETLEY Brick & Tile has introduced a new computer-aided system for the design of special bricks.

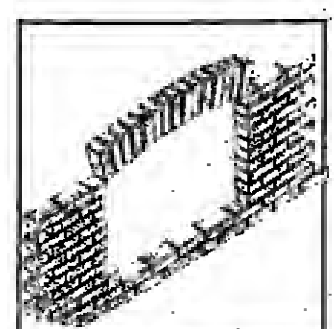
The scheme is part of the company's £20 million investment programme which has taken place over the last two years. The first phase, costing £250,000, will mean architects' brick detailing problems can be solved more quickly.

Rather than computer operators running the system, it is being handled by special managers in each of Steetley's brick-making plants.

They have been trained to use the system to automatically assess numbers and types of British Standard special bricks required for a particular job.

More significantly, they can also modify special bricks to suit particular design requirements, or even create non-standard specials.

In other words, the designer is



Computer-designed the Steetley way.

truly in touch with the man who is responsible for the manufacture of the special bricks which are required to fulfil a particular design.

So how does this work? The architect's inquiry is directed at the appropriate special manager on his workstation in the manufacturing plant. This is fed through Britlab Telecom lines to

the central processor at Steetley's head office in Newcastle-under-Lyme. Here the design is drawn on a Hewlett Packard plotter and the quotation is raised through a word processor link.

Both drawing and quotation can be in the post back to the architect the same day. A two-way communication is immediately set up between the architect and the special manager without any intermediate people being involved. In the future it is envisaged that architects with compatible equipment will communicate directly with the Steetley computer equipment.

The software on which this system is based is Building Design Partnership's Acropolis System. Steetley chose this system because, according to Philip Margrave, Steetley's commercial director, "it was a system designed by architects for architects".

As an example of the type of operation which the system can undertake, given certain basic dimensional information, it will swiftly set out an arch with the voussoir bricks accurately dimensioned making allowance for joint thicknesses etc. It will also take note of the amount of firing shrinkage which will occur with the particular clay, while calculating the dimensions of the "green" brick. This "green" size is printed out on a dot-matrix plotter at the factory and is used in the manufacture of the special mould. If there is a design change and it is decided to include a larger, feature keyhole brick, the system will automatically re-dimension the remaining voussoirs.

Arthur Barnard forecasts improvement: "This is only the beginning. The system is so versatile that we shall only be restricted by the limits of our own imagination."

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Estate asbestos risk 'ignored'

RESIDENTS of a housing estate in Sheffield claim lives could be at risk because council housing chiefs are ignoring Government advice to remove asbestos from a block of derelict flats in the city.

Officers from the council said it would cost £300,000 to remove asbestos from 653 derelict dwellings on the Broomhill estate. They are recommending that the asbestos is left where it is until the flats are demolished.

The DoE has just published a revised edition of its safety

guidelines for handling asbestos. *Asbestos materials in buildings* says asbestos in good condition should not be disturbed and may be left in place safely but asbestos which is damaged, deteriorating or releasing dust should be treated or removed.

The flats on the Broomhill estate have been the subject of vandalism, and theft of piping and ducting, causing damage to the insulating asbestos.

Residents claim they have seen fibres floating in the air and are calling for action.

The council has erected a security fence around the estate, but this is being breached.

● The Association of Metropolitan Authorities is calling for

extra government cash to enable local authorities to remove asbestos from council housing. Latest estimates put the total cost of removal at £1.5 billion.

DY Davies top profit forecast

DY Davies, the first architecture practice quoted on the stock exchange, narrowly topped the profits forecast in its prospectus.

In the year ending April, it made a profit of £765,000 compared with a forecast of £750,000 and the previous year's figures of £315,000.

PUBLIC SECTOR APPOINTMENTS

BRICKLAND DISTRICT COUNCIL ARCHITECTURAL ASSISTANT (ES 23)

Salary APTC Scale 4 £6,900-£7,713

A vacancy exists for an experienced Architectural Technician to serve at the Guildhall in East Dereham. The post requires the capability of producing working drawings with a minimum of supervision and the willingness to assist in contract administration where necessary. The majority of the work comprises housing and speculative factories.

Application forms, due for return by 18th September 1986, are available upon telephoning Dereham (0348) 5333 ext. 215 or by writing to:

The Surveyor, Brickland District Council, The Guildhall, East Dereham, Norfolk NR19 1EE.

Landscape Architect

PO2 £13,167 to £14,202 inc

To join a small landscape section to work on a variety of projects — new parks; satellite developments; hard and soft landscaping to new build projects; environmental improvements.

The Council's Corporate strategy promotes inter-departmental co-operation — this person appointed will be involved in brief preparation, public consultation and design development on an inter-departmental basis. The work is varied and interesting. We are looking for an energy and imagination, ability in hard landscape detailing, substantial experience of contract management and an enthusiasm for co-operative and team work, both within the section and with other departments. You should be qualified to RLApt. If already qualified as an architect, or RLApt. IV it is not.

Applications forms are available from Landen Borough of Hammar Smith and Fulham (Parish), Town Hall Extension, King Street, Hammar Smith, W6 9JU, telephone 01-741 0804 (24 hour answering service) quoting reference number AGLD.3

Closing Date 18th September 1986.

You are welcome to apply whatever your gender, race, colour, ethnic origin, nationality, sexual orientation, religious beliefs or practices, age (up to 65 years) or disability. Job Share welcome

Hammar Smith & Fulham



ARCHITECT TO LEAD IN-HOUSE TEAM (Salary up to £14,000 plus Car Allowance)

Ipswich Valley Housing Association needs a registered architect to lead and manage a small but established in-house team with a programme of work including low energy new build, rehabilitation and special project conversions. The job presents an excellent opportunity for an architect with several years relevant experience since qualification. While experience in housing association work would be an advantage we are looking mainly for someone with the enthusiasm to tackle inner-city renewal combined with design, technical and management ability.

Application form and further details from Barbara Clare, Ipswich Valley Housing Association, Brunswick House, Broad Street, Salford M6 5EZ. Tel: 061 737 6991.

Closing date: 19th September 1986.

Ipswich Valley Housing Association is an equal opportunities employer. Applications will be considered regardless of ethnic origin, sex, sexual orientation, religion or disability.

PROPERTY SERVICES DEPARTMENT ARCHITECTURAL TECHNICIAN OR SURVEYOR (S4/6) £6900-£9591

to become substantially involved in our work relating to mobile and temporary accommodation sites throughout Kent and County and also to assist with the Department's workload in respect of gypsy sites and of adaptations for the physically handicapped.

Applicants must have a mature and sensible outlook and possess good communication skills. They must have a sound knowledge of building construction, be competent in the preparation of drawings and in supervising small contracts, and also enjoy working on their own initiative with the minimum of supervision. A minimum qualification of TEC in Building is required although the H TEC is preferred. An essential user car allowance is payable or alternatively a car may be available under the County Council's Car Leasing Scheme.

Job description and application form returnable by 12 September from the Head of Property Services, Springfield, Maidstone, telephone 871411 extension 2178.

KENT COUNTY COUNCIL

DONCASTER METROPOLITAN BOROUGH COUNCIL DIRECTORATE OF DESIGN SERVICES

A vacancy has arisen in the Architectural Section of the Directorate of Design Services and the details are as follows:

ARCHITECTURAL TECHNICIAN Scale 6 (£8979-£9591) plus casual user car allowance

To prepare working drawings required in connection with all types of building projects, with particular emphasis on home improvement schemes and new housing developments (including housing layouts). The duties will include surveying existing properties, architectural supervision of improvement contracts and contracts for minor building works, all under the direction of senior staff. Applicants should have an appropriate HTC or the equivalent, and membership of SAA/T would be an advantage.

Application forms and further details are available from the Chief Executive (Personnel Section), 2 Priory Place, Doncaster, DN1 1BN. Telephone Doncaster 734020.

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Removal expenses and Casual Car User Allowance will be paid in appropriate circumstances.

Application forms (returnable by 18th September) from Personnel Office, City Architects' Department, Baskerville House, Civic Centre, Birmingham B2 4AA. Telephone 021 235 3247.

A touch of class

Deep overhanging eaves, brick brooding and tinted glass have given this new housing development a touch of the Arts & Crafts, while using up-to-the-minute materials.

Duracore stores have helped produce the sharply defined close-mitred hips, and their lightness has reduced the need for expensive strengthening of the roof structure.

Designed by architects Pinchin & Kellow, the 22 "executive" houses are in a landscaped setting close to Wimbledon Common.



Butterley on move

Sited in the heart of Nottingham's architectural community, Butterley Brick's new Midlands showroom and sales office at 28 Clarendon Street is featuring a display of its 130 facing bricks, clay pavers and brick slips.

Michael Rose, Butterley Brick's managing director, at the opening ceremony in July explained that the decision to relocate the Midlands showroom from its factory at Ripley was taken to "encourage specifiers, builders, developers and also the general public to use the facilities".



On the old lines

The former Exchange Station in Liverpool has been refurbished and extended at a cost of £11.5 million to form offices for letting. The Tithelham Street facade is said to be the longest retained facade in Europe. The corner with Blissett Street has been rebuilt to match the orders on the front using stone from the former Blissett Chambers. The clock has been restored by a local specialist, and the mechanism brought down to the ground floor, being placed on view in a bullet-proof box.

The station buildings which have been retained are the second on the site. The first station was built in 1850 and replaced in 1866. The hotel was closed in 1972, the second station was opened. The new building is ready for letting 100 years after the first station was opened. The new building has 650 miles of reinforcement, 435,000 facing bricks. (Architects: Kingham Knight Associates, Liverpool; job architect Tony Griffiths. Contractor: Tysons Contractors. Letting agents: Matthew Goodman Postlethwaite.)

Passing the test

Above and below: This new office block in Woking tested the capabilities of manufacturer Blockleys. The contract called for the production of 100,000 bricks and 300,000 specials, 50 per cent of which were made to tolerance because they had to be incorporated into a structure which were part of a series of complicated overhangs. There was a problem, successfully overcome, of ensuring that every brick and colour mixture in the facing bricks.



Masonry Society symposium

THE British Masonry Society is holding its first International Symposium at the Bloomsbury Hotel, London, from Tuesday, December 2, to Thursday, December 4, 1986.

With the objective of promoting the science and practice of masonry construction, the Society, which was inaugurated last June, straddles the emotional gulf that can exist between the manufacturers of bricks and blocks, and provides a platform for the dissemination of information on all matters from the basic raw materials through to the construction and aesthetic design of masonry.

The seminar will contain papers dealing with bricks, blocks, mortar, dpc's, wall ties and other ancillary products, and their influence on design, construction and post-construction performance.

Steetley showroom

STEETLEY Brick & Tile has opened a London showroom at 172 Tottenham Court Road.

This 230sq m permanent display area has been positioned strategically to encourage use by the many architectural practices in the area and other parts of London.

Steetley has on show samples of its entire range of facing bricks, special bricks, clay plain roof tiles, fittings and ventilation products.

Also in the premises are full conference/seminar facilities which the company intends to use for regular technical and practical discussion group meetings.

Redland on RIBACAD

AFTER six months' hard labour, Redland Bricks has announced that information on its special shaped bricks, manufactured to British Standard 4729, is now available to building designers through RIBACAD — a new service whereby CAD users can obtain free software information on products manufactured by major suppliers which is compatible with their own CAD systems.

Designers can now reproduce special shaped bricks, plus standard application details, and incorporate these to scale in their overall designs in a matter of seconds. Up to four views of each brick are given — plan, two elevations and isometric — plus its use with various bond patterns.

Quality approvals for eight brickworks

LAST year the inauguration of the Ceramic Industry Certification Scheme (CICS) — a third party assurance scheme based on British Standard 3750 specially devised for manufacturers reported in *Building Design's* Brick Supplement.

Now after about a year of operation a total of eight brickworks have received certificates of approval after assessment based on the requirements of BS 3750: Part 2 and the Quality Assessment Supplement No QAS/BT/1.

The bricks honoured include: George Armitage & Sons; Howley Park Works and Swillington Works, Butterley Brick; Waingroves Works, Carlton Main Brickworks; Grimethorpe, Rudgwick Brickworks; Rudgwick, Salvesen Brick; Cheadle Works and Denon Works, and Steetley Brick and Tile; Todhills Works. It is also reported that the Accrington brickworks of George Armitage is awaiting CICS approval.

Ceramic research unit looks at new brick uses

EARLIER this year the British Ceramic Research Association changed its name to British Ceramic Research Limited, or Ceram Research for short. This change of name reflected a change that had been taking place in the aid BCRA's activities.

Historically, BCRA was founded more than 40 years ago to serve the UK ceramics industry, but now increasingly it is operating on an international basis.

With a much wider corpus of customers, Ceram Research is able to maintain a laboratory of international stature, serving all forms of ceramic research, from advanced ceramics which includes such projects as the Department of Trade & Industry's Ceramic Application in Reciprocating Engines programme, to more mainstream investigations into, for instance, the strength of reinforced brickwork.

Of its annual turnover of £4 million, Ceram Research spends £750,000 a year on research directly involved with the brick industry and related products. This includes raw material research, investigations into the environmental performance of brickwork, structural work involved with British Standards Codes of Practice, as well as research carried out directly for member companies.

Dr Geoff Edgell, head of the Heavy Clay Division, explained

that much of his division's time is spent investigating economic methods of constructing buildings up to five or six storeys in height using loadbearing brickwork.

The Department also has rolling programmes of testing with the Building Research Establishment and the Department of Energy.

Currently it is investigating more highly perforated bricks (up to 40 per cent voids) which would result in dramatic reductions in the energy used in firing the bricks, as well as lower transport costs.

Increasingly the work of Ceram Research is tied up with

litigation — a sad commentary on our increasingly litigious society.

Often, Edgell points out, Ceram Research's efforts lead to out-of-court settlements.

A more unusual aspect of the work of the Structural Research Heavy Clay Division is the increasing amount of testing it is performing for overseas clients.

There numbers are likely to increase, particularly in the States, where this type of work is usually undertaken by universities which do not appear to be able to respond to clients' demands as rapidly as Ceram Research, despite the geographical problems involved.



Competition winners

The outright winner of this year's Guild of Bricklayers' London and South East Region Bricklayer Apprentice Competition was Richard Cusick from Willdon College, working for Hoy Mills.

The Rysh Award for best working style went to Brian Woodcock of Canterbury College, who is employed by Earl & Co.

competition, which was held in July, were the Rysh Brick Company and Tico, who supplied the bricks and mortar for the heels and flint.

Other sponsors were the Edvale Tool Company and Rubene Chesterman.

Terry Marshall, Rysh Brick's new sales manager, presented the prizes and commented on the high quality of the bricklaying.

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News in pictures



Golden brown

Planning requirements dictated the use of brick for the Anglia Water Authority's new headquarters at Colchester. Breaking with local custom (which favoured the use of red brick) the architects, Pick Everard Keny & Gimson, chose Istock Building Products' Roughdale Golden Brown Mulli.

Their brief was to design a low-energy, low-cost building with high-quality finishes to house approximately 280 staff in offices which generally have natural light and ventilation. This requirement has led to a higher than normal proportion of external wall to floor area.

The building is designed as a series of seven octagons set around a landscaped inner courtyard. As well as offices, the accommodation includes a board room and committee

rooms on the top floor, an air-conditioned computer room and a canteen and kitchen.

The site was previously occupied by an old reservoir and a pumping station which dated from the end of the last century. Because of the site conditions, piling was needed for the new office complex and the old pumping station, which is still occasionally used, is now about to be reconstructed by the architects.

Staff of the Anglia Water Authority occupied the offices in June 1985. Wharpey was the main contractor and the contract value was in the region of £2 million.

Pick Everard Keny & Gimson is a multi-disciplinary practice. Its own quality surveyors and structural engineers were used on the project.

Market style

Designed to emulate the adjacent old market building, this development in Osmabrick Square, Derby, uses Istock Bristol Red facing bricks for general wall surfaces, with Istock Bristol Gold facings to emphasise the arched door and window openings.

The architects for the project are David Hall Associates of Derby, and the contractors are Wilson Bowden Properties.



Up from the ashes

Situated on the riverside in the old town of Hull, the second of a group of 18th and 19th century warehouses has just been converted into flats and studios after a period of semi-detention.

The conversion of this Grade II-listed building was carried out after a disastrous fire and it is now appropriately named Phoenix House. The project was a joint venture by Tarmac Construction and Tarmac Homes to design by architects Fisher, Hollingsworth & Partners, Abbey Road, Leeds. The project was chosen for the work because they matched the existing brickwork.



News in pictures

Now on the air

Making good use of the sloping site, MWT Architects' design for BBC Radio Devon's new studio block in Exeter places the studios at the lower ground level with offices above. Two types of Westbrick products have been used in the design — Westbrick No 50 facings for general wall surfaces and No 42 facings to pick out the detailing round the windows. The client for the job was EBC Developments and the main contractor was Sleeman Construction.



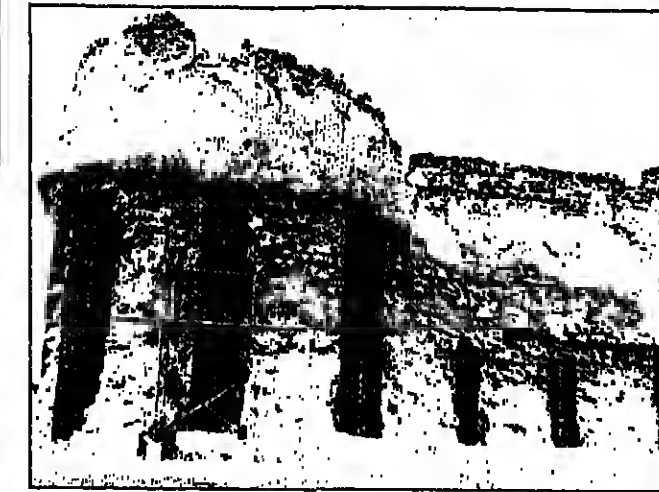
Holding the fort

Probably built around 1550-1600, Arad Fort at Mullharrag, Bahrain, was lost for decades beneath a pile of sand.

It was rediscovered recently, and the government of Bahrain commissioned Scottish archaeologist Dr Archie Walls to restore it.

Butterley Class A engineering bricks from its Walsgrave works are being used to construct a series of piers around the base of the fort to help support the upper masonry.

Eventually Butterley's bricks will be concealed by layers of rendered masonry.



Historic site resurrected

Malt Mill Lane, Alcester, has been the historic site of a rehabilitation project carried out by Associated Architects with considerable skill and great sensitivity to the charm of the area.

After a compulsory purchase of the majority of the semi-detached properties in Malt Mill Lane, some of which dated back to medieval times, the Stratford-on-Avon District Council instituted a phased redevelopment of the area. This involved the building of 13 new single-storey dwellings and the careful conversion of the existing buildings.

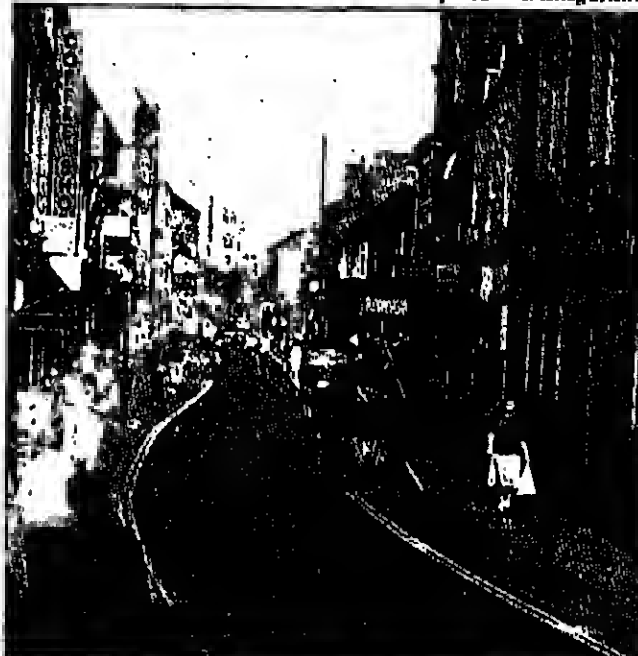
A central boilerhouse was created in a 17th century barn

and hay loft on the site, from which district heating and hot water is supplied to the whole development.

On completion, accommodation had been created for about 78 people in 24 houses and 15 flats.

The project received a commendation in the RIBA Awards, and an earlier phase of the scheme received a European Heritage award and a Times/RICS Conservation award.

Bricks and pavers for the project are Redland's Weldon Rough Stock, chosen because they blend so well with the existing brickwork.



Pedestrian pavers

Aldridge Staffordshire chamfered pavers from Istock Building Products were chosen for this major pedestrianisation scheme in Leicester under the joint control of the city architect's and the city engineer's departments.



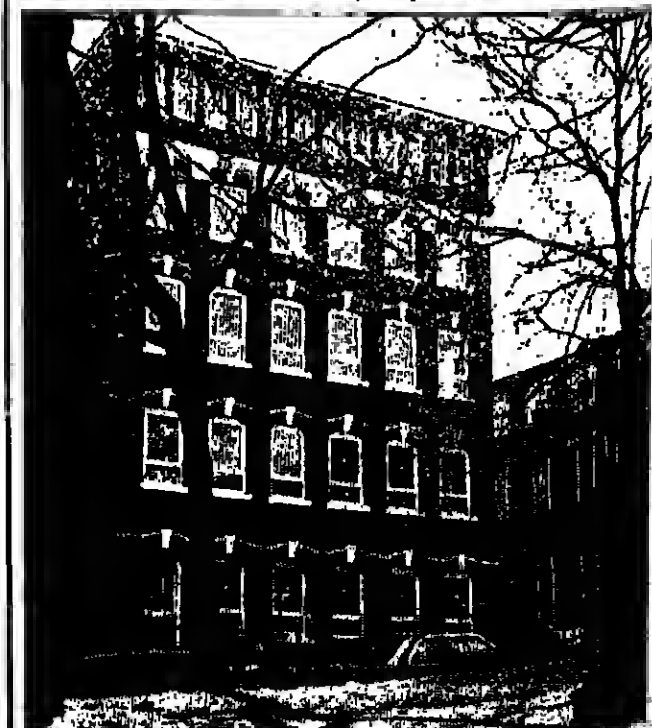
Singles speciality

On a long, narrow strip of land, sandwiched between a pavement and a multi-storey car park near St Paul's Square, Birmingham, Associated Architects have designed this block of single-person flats for Trident Housing Association. Two unusual features of this scheme are the use of stack-bonded brickwork and the abnormal number of special bricks. The block, which recently won a Housing Design Award, was completed by securing the main site by a brick wall.



Garden gates

Abbey Road facings from Yorkshire Brick were used in the construction of the new piers of the main entrance gates to the Trentham Gardens leisure complex. Chartered surveyors Griffin Jones & Associates were responsible for the design and the building work was undertaken by Percy Bilton.



Purpose-made profiles

Covering a disused warehouse in St Paul's Square, Birmingham, to provide flats for young single people involved the manufacture of a number of purpose-made shapes by Istock Building Products in its Leicester Red Stock plant. To match the profile of the old brickwork, the architects for the project, carried out for the Shape Housing Association, were Associated Architects. The contract value was around £450,000.

MASTER PIECES



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WESTBRICK

Interview

BUILDING A REPUTATION

Bricks should become associated with the good things in life according to the chairman of the BDA. Paul Marsh reports.

GRAHAM Thompson, the newly elected chairman of the Brick Development Association, is no stranger to the role. This is his second spell in office, his first being from 1982 to 1984 when he presided over what was one of the most significant periods in the association's life. During this time of change the staff was halved, a new director-general was appointed and the operations of the association were massively reorganised — the object being to make the association more effective.

In hindsight, Graham Thompson sees these changes as being almost entirely for the good. From them emerged a more sleek and effective BDA. But will his second term of office be accompanied by similar changes?

The answer is no. Thompson identifies a need now for consolidation. "The BDA should continue doing the things it is good at and expand its role so that bricks and brickwork become associated in the public's mind with the good things of life," he says.

To this end he is a staunch supporter of the BDA's recent

advertising campaigns, which have often been aimed at the general public in an effort to increase its awareness of the contribution brickwork can make to a pleasant environment. He believes fervently in the usefulness of the *Brick Bulletin* as a means of encouraging good brickwork design. In addition, the dissemination of technical literature and attention to education, he believes, are "major planks in the association's strategy".

"The BDA should do those promotional things which commercial companies would be unable to do, or would find very difficult," says Thompson.

In some respects, Thompson takes over the reins of a quite different association from the one he steered before. Since his previous term of office Butterley Brick has joined the association, bringing its membership to about 95 per cent of the industry. Now more than ever the association represents the whole industry with the members firmly consenting to the need for a strong BDA.

Thompson is an enthusiast for the brick business. A Londoner, he qualified as a mechanical engineer before entering the brick industry in 1961. He joined Westbrick in 1966 as the general production manager. By

1969 he had become the managing director of the company, a position he holds to this day, after surviving two major changes of ownership — the latest in May 1984 when Tarmac bought Westbrick. He admits to a "comfortable relationship" between his company and the Tarmac Group.

Recent years have seen dramatic changes in the way the brick industry is organised and owned. Now 80 per cent of the business is carried out by five companies (including Westbrick, the smallest of the big five). All of these are dedicated to the promotion of brickwork and to changing the 1960 image of brick as

synonymous with industrial building. Hence the consumer advertising.

Investment in new plant and equipment by all major brick manufacturers in recent years has been immense. Is there then a danger of over-capacity? Thompson argues: "Investment is not dangerous if the capacity it creates is controlled to the benefit of the market as a whole. It would be very much more dangerous not to produce what the customer wants, when he wants it. The industry now has the capacity to respond to cyclical needs — an ability it has not always had before — and needs are going to continue to be cyclical for the foreseeable future."

With the major capacity in the hands of market-sensitive and profit-orientated companies — and ones who are capable of managing that capacity sensibly — Thompson believes that the industry will be able to respond to changing needs in a way it has never been able to in the past. Companies will be devoted to healthy competition, but not to the desire to sell at all costs, even if it means cutting their own throats.

And what of the way bricks are used today? "Brick is now a specialist cladding material," says Thompson. "This change has been almost imperceptible, but it puts brick into a different market. Quality is important — particularly quality of appearance. When you consider that the price of the bricks themselves in an average house make up only about 3 per cent of its cost, and less than 1 per cent on other building types, brick prices are no longer so important. It is worth paying a little more for quality."

What of the future of the

building industry in this country? Thompson cannot see major expansion for a considerable time. He believes that the building business for the next decade or two will remain within 25 per cent plus or minus of its present size. He sadly points out that in the UK we spend less on building than our European neighbours (7.3 per cent of the GNP, whereas the average is around 12 per cent). Nevertheless, in all the vagaries of the building industry's fortunes in the last decade or two, facing brick sales have remained very stable. The major change has been the dramatic decline in common brick demand.

Lobbying is an important part of BDA's function, having regular meetings with MPs of the three major parties (upon the brick industry's point of view it also has a direct entry to the minister — a facility it uses sparingly, reserving it for specific causes). Thompson believes there is still a lack of understanding in many quarters of how to use bricks well — a lack of understanding because in the years since the last war students have not been taught how to use brickwork. In the 1950s and 60s, during the enthusiasm for new techniques and innovation at all costs, brickwork became unfashionable. It is this break in training which the BDA has to strive to rectify. It must also, in Thompson's opinion, aim to put the message over to the young in schools and colleges.

Diminishing craft skills also concern Graham Thompson. The association is co-operating with the CITB to improve training but, as Thompson puts it, somewhat wryly, "Industry has to work hard to get what it needs from the CITB."

And so at the outset of Graham Thompson's new term of office and as mid of a successful brick company, how does he see the brick business? "As healthy as I've known it in the last 20 years," he replied. The reasons for this he lists as — adequate investment in modern plant, changes in the commercial structure of the industry, a more lively outlook and an appreciation that the brick industry needs to sell itself and its services.

Graham Thompson looks forward to his next 20 years in the brick business with confidence.

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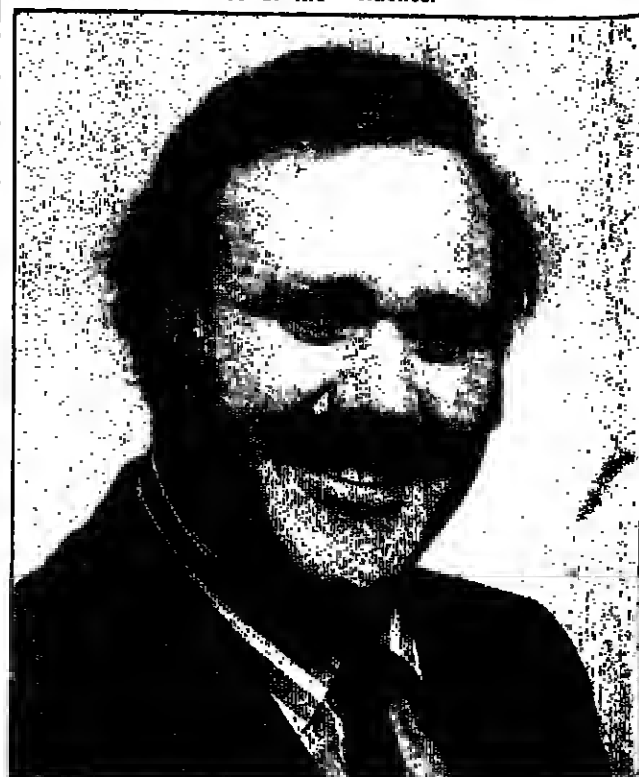
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Graham Thompson, looking forward to his second term in office.

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MIX 'N' MATCH

In this two-part feature David Hannam, president of the Mortar Producers Association, and Ian Southcott, marketing services manager of RMC Mortars, take a look at the way special mortars have developed in recent years and speculate on their future.

A QUIET revolution is occurring in the staid, traditional building industry. Despite technological changes which have affected almost all construction materials and operations, one of the few materials still produced on site is mortar.

Factory-made mortar, comprising well-graded sand and matured lime putty, produced under factory-controlled conditions, was first introduced in the UK in 1938 and has been in operation ever since. While this was a great step forward from making lime on site, it left the job of correctly gauging the cement and establishing the final working consistency of the mortar to site personnel.

The durability of brickwork depends not only on the standard of bricks used and how they are laid, but on the quality of the mortar surrounding them. In too many cases the whole quality control aspect of brickwork depends on a labourer with a shovel mixing the mortar correctly.

To the architect and specifier, who go to great lengths to ensure that their brickwork and mortar specifications are compatible, this haphazard method of adding the cement content to the

mix can be a nightmare.

A solution (and one that is causing a revolution in site practice) is the introduction of factory-produced, retarded, ready-to-use mortars which already contain the cement and need no further mixing on site. Accurately proportioned mixes to meet any given specification are eminently suitable for all types of masonry, plastering or rendering purposes. Normally retarded for 36 hours, they are available in a variety of colours. Typical of the service offered by suppliers of retarded ready-to-use mortars is that at Tilcon.

This company delivers the material to site in specialised vehicles which discharge the mortar into insulated site containers of 0.30m in capacity. These are polythene lined to protect the material until use and the liners, which are colour

coded, identify the day of delivery. Retarded ready-to-use mortars are designed to remain workable for two working days in the container, but set in the normal manner once they are placed between the bricks or on to the background with suction. The containers are designed to be crane-slung or fork-lifted to the point of lay.

Whether for use on large sites (where the material increases productivity, ensures quality control by factory production methods, guarantees specified mix proportions and maintains cleaner and tidier sites) or for small or restricted access contracts, (where it is impractical to locate a site mixer or have purloins of cement and sand delivered) the use of retarded ready-to-use mortar is increasingly accepted. It is suitable for all work above or below damp-

proof courses and is available in a variety of mix specifications depending on the properties of the masonry unit, the type of construction and the degree of its exposure. The controlled production of factory-made mortars ensures the accurate proportioning of sand, cement, lime, colouring pigments and admixtures which no site can reproduce. This enhances the durability of the mortar and, with controlled cement and air contents, greatly reduces the chance of frost damage in winter.

For the architect and specifier, therefore, retarded ready-to-use mortar, with its producer's guarantee, takes the doubt out of the mortar quality. If designed and built properly, brickwork is probably the most versatile and economic form of construction there is. It

is also very flexible in that it can be built to virtually any shape or dimension. Good brickwork will mellow with age and improve in appearance, rather than deteriorate and become unsightly. It has to be able to withstand the rigours of the British climate without deterioration and, unlike most consumer items, it is expected to be maintenance-free for at least 20 years.

The achievement of this state of affairs depends not only on good bricks, design and workmanship, but also on correct mortar mix. Archaic and often haphazard site methods of making mortar must give way to those based on factory-applied quality control.

David Hannam

The colour code

AS the awareness of coloured mortar as a design tool has become more widespread, its use as an aid to enhance the appearance of brickwork has grown dramatically.

The use of coloured mortar originally grew out of a demand for ready-mixed lime and sand mortars, where naturally occurring sands impart a more definite colour to the mortar produced. In response to this demand, mortar producers developed a range of colours to provide the specifier and contractor with a range to complement the brick colours available.

In the 1950s and 60s the local authority housing boom proved to be an important stimulus to

The effect different coloured mortars have on a wall built of one type of brick.

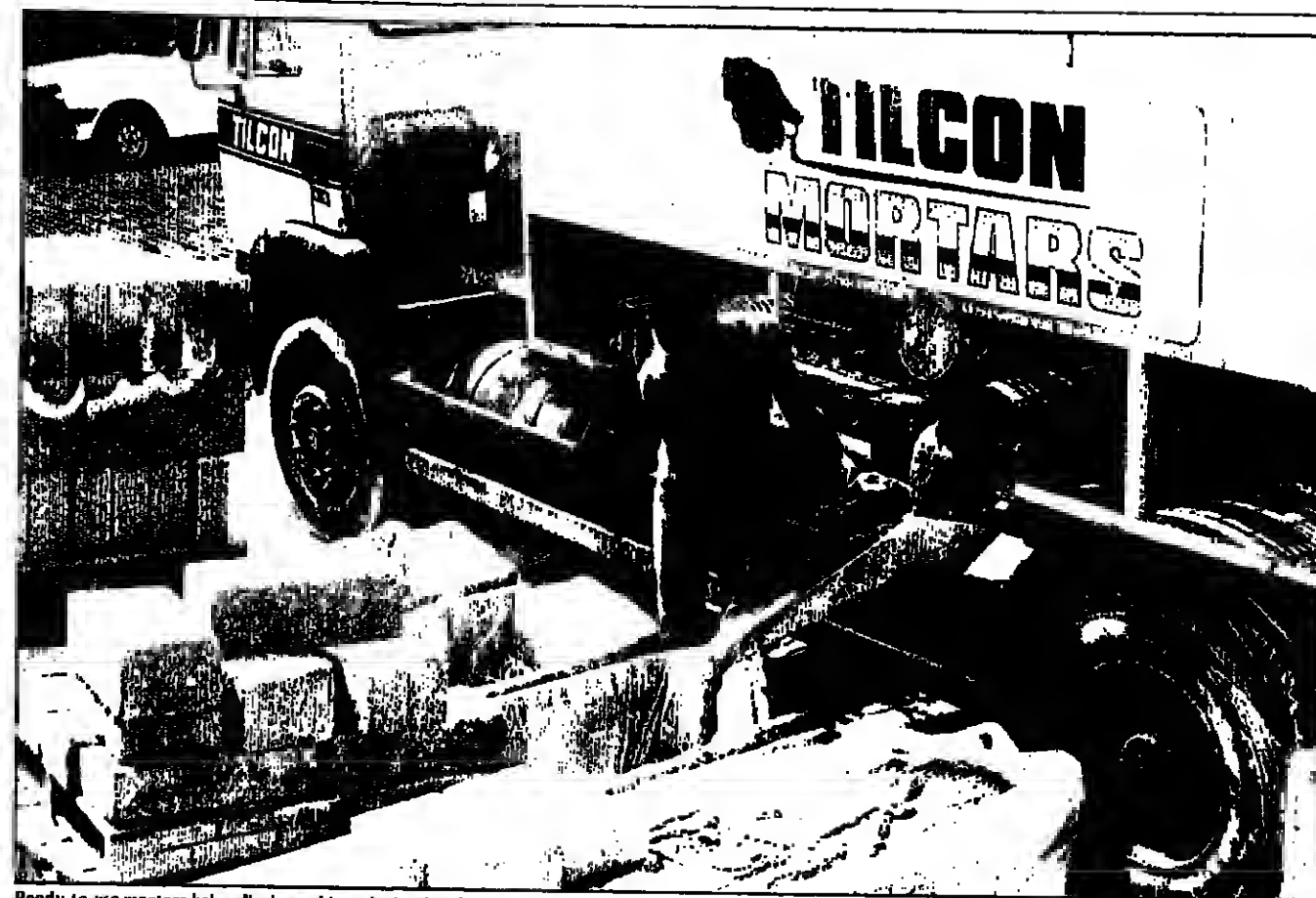
the demand for coloured mortar. As the influence of the private housing market has become dominant, the penetration of coloured mortar has expanded from this initial base to a point where 50 per cent of all factory-produced mortar is supplied in coloured form. In the fiercely competitive private housing sector, the need to improve kerb appeal is vital. For a surcharge of (at most) 0.25 per cent of the total cost of a new dwelling, coloured mortar can significantly help this process.

The further need to impart variety to a housing estate can also be achieved by coloured mortar. The illustration shows how changes in mortar colour can alter the appearance of a single type of brick almost unbelievably.

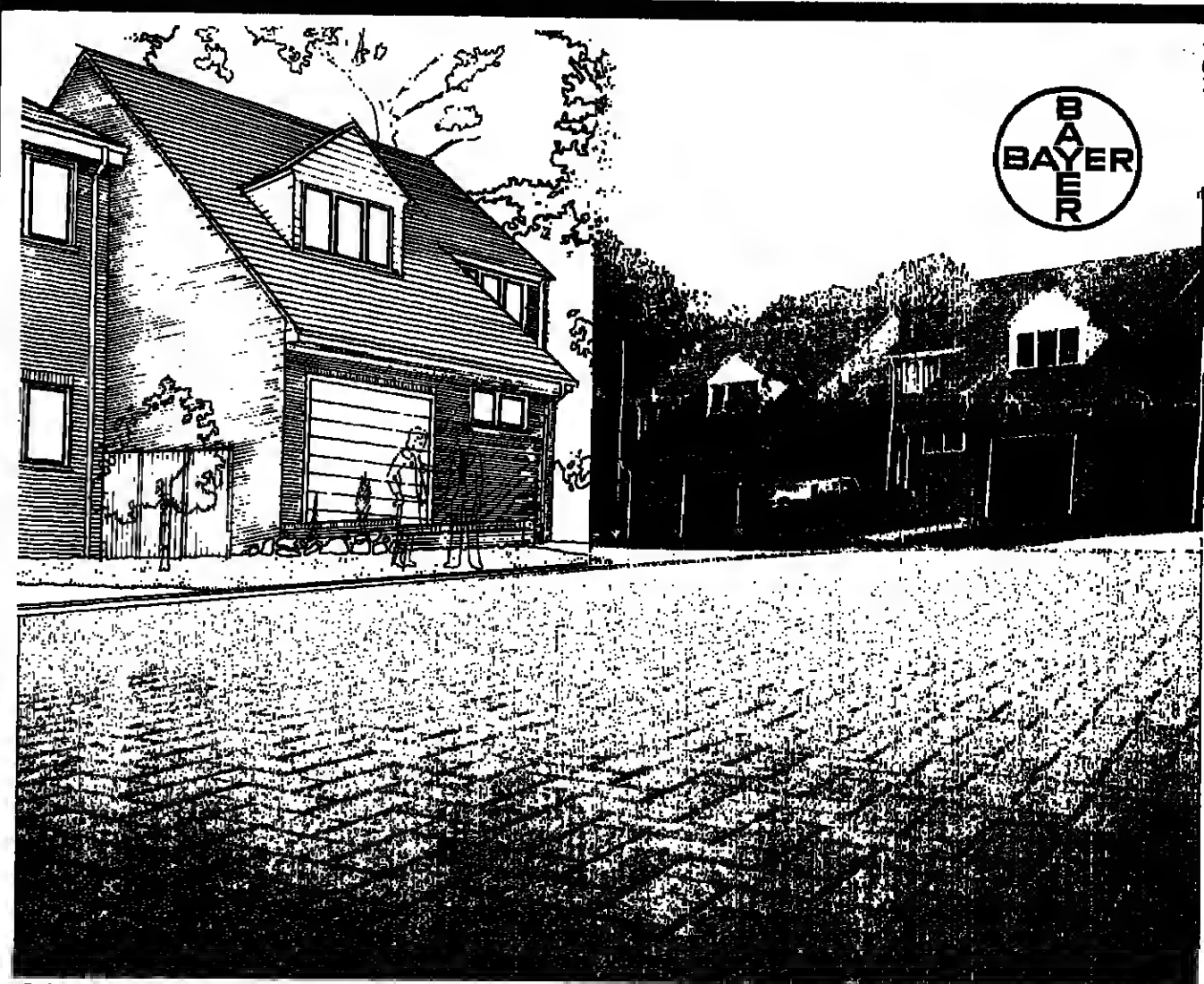
Ian Southcott



Bricklayers applying ready-to-use mortar on the Royal Academy of Arts in Glasgow.



Ready-to-use mortars being discharged into the insulated site containers.



Parkwood Development courtesy of Sunley Estates Ltd. Concrete block paving by Marley Building Products Ltd.

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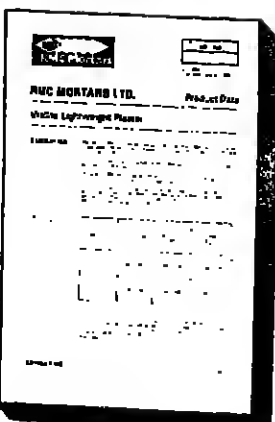
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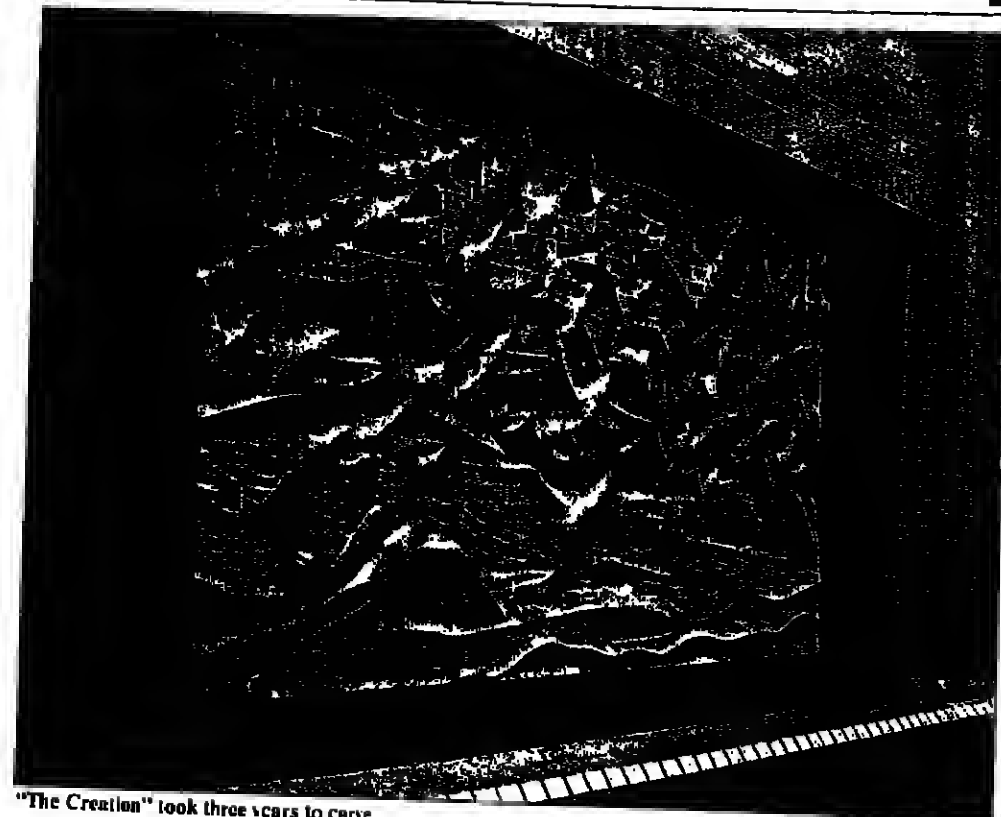
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"The Creation" took three years to carve.

And on the fifth year...

AFTER five years' effort — two years of initial design and thought and three years of physical labour — Walter Ritchie's major brick sculpture, "The Creation", was unveiled during the official opening of the new Bristol Eye Hospital (architects Keadell Kingcott Partnership) on July 30.

The planning authority approved the architects' design for this energy-efficient building on condition that some elevational enrichment was added at pavement level. The architects did not wish to introduce another material to what was essentially a brick building and approached Ritchie to design a sculpture in brick.

Ritchie has considerable experience of this type of work, stretching back over several years (see pages 20-21). He chose for his subject "The Creation" — a progress of five panels, each 3.6m x 2.1m, suggested by an extract from the Romanesque Lecture given by the 1st Viscount Samuel, lines from which are incorporated in contrasting brick lettering in one of the panels.

Because site working was impractical, the panels were laid and carved at Ritchie's studio in

Kenilworth. The bricks were Istock Red Rustics, and RMC Mortars supplied the mortar and gave technical advice. Moving such large panels of unreinforced brickwork had no reassuring precedent and the success of the operation was a testimony to the strength of the mortar (1:1/4:3 mix with SBR) and the skill of the bricklayer, Len Aitken.

Special bricklaying techniques are required for sculpture. Bed faces of the bricks were painted with SBR to obtain additional bond and stop suction. Ritchie served his bricklayer with bricks treated while still in a tacky condition. Care was taken to make the joints solid. Bedding and striking took place in one operation. Joints were kept fairly narrow and some tapping down was necessary.

During tamping, the mortar curves out and away from the underside of the brick and this can result in the formation of hair cracks which can prove a problem during carving. The joint must be struck immediately after bedding with an upward movement of the trowel to unite the mortar with the leading edge of the brick.

The panels were laid in leader bond which, although not



The sculpture was inspired by an extract from the Romanesque Lecture by the 1st Viscount Samuel.



Each part of the panel was carved separately and reassembled on site.

particularly strong, allows the greater depth of carving without exposing longitudinal cross joints. In "The Creation", some of the carving was over 100mm deep.

After carving, four of the panels were divided into two by sawing along a horizontal weak line joint, 1,200mm from the foot of the panel. Each part of the panel was handled separately (the lower section weighing in the region of 1.5 tonnes) and was reassembled on site. The

fifth panel was cut into four sections to facilitate the incorporation of the lettering. On site the panels rest on plinths of Ebony Black Himley bricks with flush perpends and raked bedding joints. The top of the recesses, into which the panels fit, are rendered and painted with black Micatex. They are flanked by black slatted blinds. Initially, to try out the feasibility of the operation, 1/2 panels were delivered and fixed in place during

October 1984. The whole operation was masterminded by Ritchie himself and took about 25 hours of continuous effort, most of it in the rain.

When the whole sculpture was in place, it represented the largest brick sculpture in the world carved from fired bricks. All the panels are carved by hand, using the textures of punch, claw tool and flat chisel to create pattern as well as form. Ritchie worked from small sketches, which had been used to

gain the client's approval. In the case he did not make his usual full-size charcoal sketches, but started work immediately on the panels, perpetually modifying the designs as he worked. Ritchie does not use assistants, but carries out all the work himself. As he puts it: "The process of sculpture stimulates thought and invention which is lost if all or part of the work is done by another hand. A work of art should be the unique work of one man."

BREAKING THE MOULD

SLOP-MOULDED bricks are not common in this country, although it is a conventional way of manufacturing bricks in Denmark where brickworks often have complementary lines making wire-cut bricks and slop-moulded bricks. There are only two British brickworks making genuine slop-moulded bricks, both owned by Redland Bricks and both owing their existence to Christopher Kellett, the chairman and managing director of Birtley Brick, who imported the method into this country a little over 10 years ago.

At that time Kellett was faced with a problem. As a small brickmaker, he believed it was necessary to have something different in order to ensure the survival of his business. He went out and scoured Europe for other brickmaking processes which would give Birtley bricks a distinctively different character. The outcome was the slop-moulding process in which, unlike other moulded bricks that use sand as a barrier between the clay and the mould, water is used to strike the brick and from the mould. But more of that later.

Slop-moulding was first introduced at the Birtley brickworks and almost immediately proved to be an outstanding success. This was because Kellett has succeeded in identifying a slot in the market which no one else filled and to which bricks with the special slop-moulded appearance were particularly well suited. In 1984 Redland acquired Birtley Brick, and today slop-moulding takes place at two brickworks in the country: at Birtley in the North-east and in Warwickshire at Redland's Arden Brickworks.

The slot in the market which Kellett discovered was concerned with the rebuilding and renovation of many old central areas of brick-built cities, such as York. In these areas there was a real need for facing bricks with a similar appearance to the old clamp or "field" bricks from which their central areas had been built.

Alec Capstick of the York city architects department, talking about work in the conservation areas within the city walls in York, sums up his attitude in this way: "If I could have found clamps, I would have used them. Slop-moulded bricks gave me a brick at the right price and one that I felt

would eventually mellow to become sympathetic to the traditional York clamp brick."

Shortly after slop-moulded bricks became available, the last local source of bricks in the York area closed down. Since then, as David Chapman, an architect in private practice who was introduced to slop-moulded bricks by the city planners, put it: "There simply is no alternative. The nearest equivalent is a southern stock brick, but they are much more expensive."

Chapman has used slop-moulded bricks on many schemes in the York area. When he worked for Shepherd Homes he experimented with mixing different colours of slop-moulded bricks on site to give the multi-coloured effect used in the Aldwark housing development within the city walls. This proved so successful that now Redland markets the Aldwark Blend — a pre-mixed selection of the same proportions used by Chapman — a gratifying interplay of ideas between designer and supplier.

"All the bricks have got purple flashings," says Chapman, "so you can mix different bricks without producing an unnatural appearance." Chapman believes that mixing the brick colours in this way brings the appearance closer to a wall built of old clamp bricks.

So what is a slop-moulded brick? In a nutshell, it is a brick which is struck from the mould by water, rather than by sand. This produces a brick with a different texture, lacking the sandy appearance of the more conventionally moulded brick. Only Danish machines are available for making bricks in this way and both Birtley and Arden plants have one machine each. Current production of slop-moulded bricks is 380,000 per week from Birtley and 250,000 from Arden.

Clay used at Birtley is Team Valley glacial silt which is dug twice a year and allowed to "sour" for six months before use. After grinding it has a very fine texture which needs opening up by the addition of "grog" in the form of concreting sand. This stops "bloating" of the bricks.

To achieve the multi-colouring, coal slurry is added. To avoid steam formation, the clay mixture is dosed with barium carbonate, except in the case of clay for light buff brick production.

A much higher water content is required for the production of slop-moulded bricks than other forms of brick — around 20 per

Innovations

Slop-moulded bricks were never part of the UK brick manufacturing tradition; yet now they are helping to conserve some of the most valuable and traditional examples of our building heritage. Paul Marsh reports.

base colour. The drying process is slightly different and firing takes place in a Hoffman transverse arch kiln.

The distinctive texture of slop-moulded bricks is achieved by suction as the bricks pass through the moulds in the rotating table.

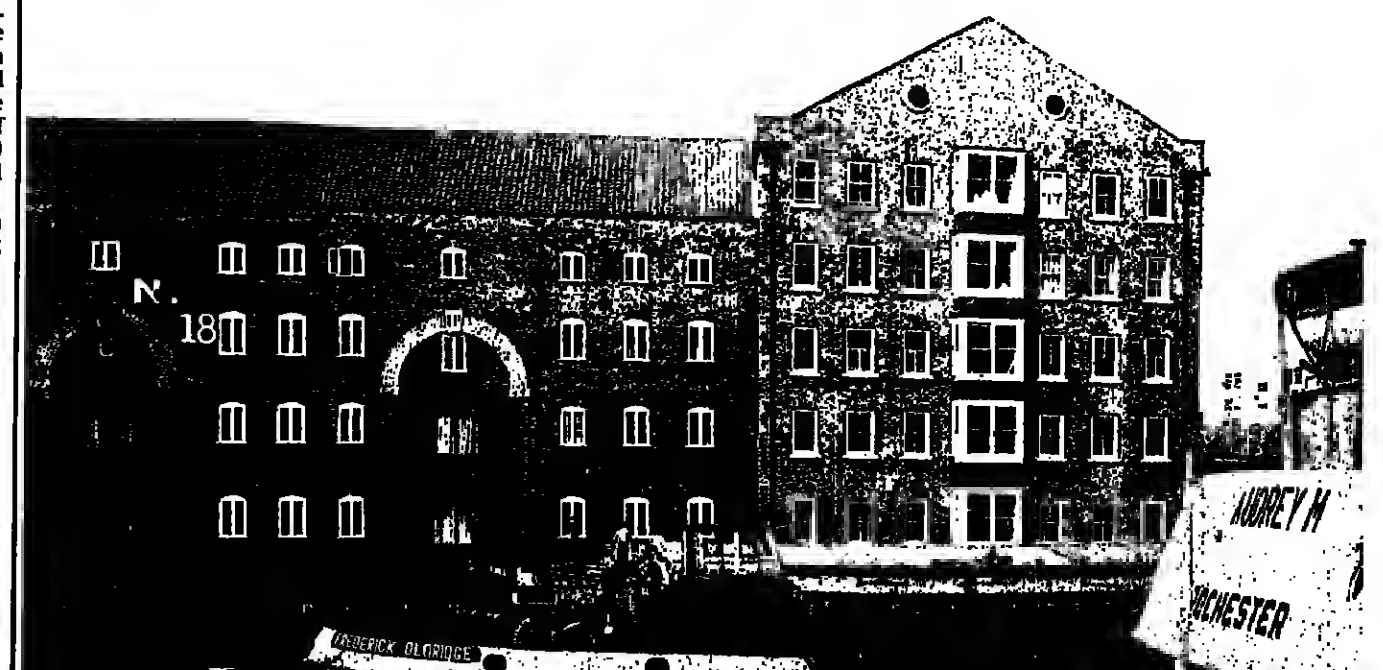
Redland Bricks reports that its slop-moulded bricks sell particularly well in towns and cities situated in what it calls "the M62 corridor".

These centres of population were in the past all served by little local brick fields which fired their bricks in the open air in clamps. It is a fortunate quirk of fate that the texture of many of these bricks can be reproduced using an imported Danish process.



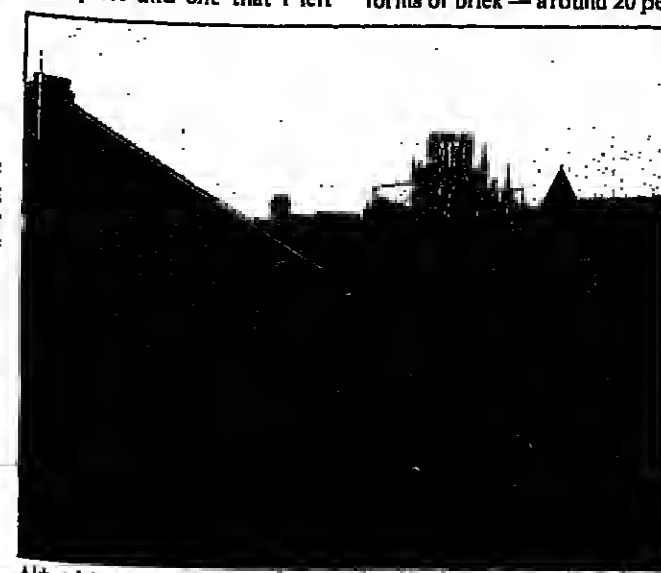
New block for St Peter's School, York by Building Design Partnership.

NORTHERN DOCKLANDS REVITALISED BY YORKSHIRE BRICK



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DOCKLAND SCHEME HULL, REJUVENATION-INNER CITY



Aldwark Inner-city development, York, by Shepherd Homes.

The completed work represents the largest brick sculpture in the world carved from fired bricks. Colour pictures supplied by RMC Mortars.

TWENTY-FIVE years ago Stephen Joseph came to Newcastle-under-Lyme with an Arts Council grant to bring live theatre to North Staffordshire.

After four years with a fit-up stage in Newcastle's Municipal Hall, he set up his headquarters in a converted cinema in neighbouring Stoke-on-Trent. The interesting characteristic of the accommodation, which was created by architects Hollins, Jones, Oldacre & Partners, was that the cinema was transformed into a theatre-in-the-round. One of the reasons for choosing this form was that it was particularly appropriate to touring companies — the Stoke company had begun as a company touring throughout England to theatre-less towns.

Clearly, Joseph's venture received a positive local response and the company, now directed by his former manager,

CURTAIN RAISER

North Staffordshire isn't known for being at the throbbing heart of theatrical life. Yet it is here that one of the most innovative theatre designs to be produced in the UK in recent years has opened its doors.

Peter Cheeseman, began to look round for a site for a permanent and purpose-built home. It took a long time to find a suitable location, and Joseph did not live to see the realisation of his dream. Cheeseman continued the project with the same zeal and today is the director of the new Victoria Theatre, which opened in August of this year with a production of a play by local dramatist Arthur Berry.

Once more the architects for the theatre were Hollins, Jones, Oldacre & Partners and the two

partners involved with the scheme, John Sambrook and Fred Oakden, maintain that the Victoria Theatre is the first purpose-built theatre-in-the-round in Europe, all others being conversions.

The architects had a unique opportunity to study theatre-in-the-round at first hand and try out ideas when they converted the cinema 25 years before. Their new theatre in many ways has been the flowering of years of experience and considerable trial and error.

Victoria Theatre seats an audience of 600, 40 per cent more than the converted cinema. It occupies a paddock adjacent to Stonefield, a large Victorian house now used as the office for an insurance company. It is set towards the front of the site, using the rest of the space as a wildlife conservation area. Many mature trees still grow there, most of the major ones set in a band across the site. The theatre occupies one side of the row of trees with the wildlife conservation area and car park

on the other.

Sambrook and Oakden chose brick as the predominant material for their design, because of its natural appearance. For the same reason they chose a brick (Redland Ashdown Peversey multi-coloured stock brick) which would simulate a hand-made appearance, most suited to the theatre's surroundings.

Brick plays an important part in the design with 13 different special shaped bricks being used. These include nearly 2,000 purpose-made cill bricks to the architects' specification, as well as over 7,500 BS specials. In addition, 21,000 Ashdown Peversey pavers and 8,600 Otterham rough stock pavers are used in the landscaping around the building. Inside the theatre brick walls surround most of the public areas — foyers, bars and restaurants. By contrast the drum, within which the circular auditorium and acting area are set, is constructed in rugged, board-marked concrete.

Intimacy is the feature of the architects' design. No person in the audience is more than 8m from the acting area. Maintaining a human scale has been a continuous concern of the architects.

When asked what major design problems had to be overcome, the architects listed:

- getting the scale right, internally and externally;
- sorting out the sightlines;
- resolving the escape route from what was in effect a circular building;
- servicing, with all the air-conditioning equipment being contained in the low, natural slate-covered pitched roofs;
- and, finally, ensuring the acoustics were right, particularly with regard to the exclusion of external noise and sound from their-conditioning equipment.

When the lights came up on the first production staged at the Victoria Theatre, Stoke-on-Trent, it was about 2½ years after work had commenced on site. The building is an unexpected delight in an area which is not renowned for its architectural gems, and much of its quality derives from a skillful use of brickwork.



Victoria Theatre, Stoke-on-Trent, opening.

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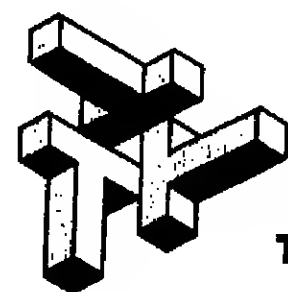


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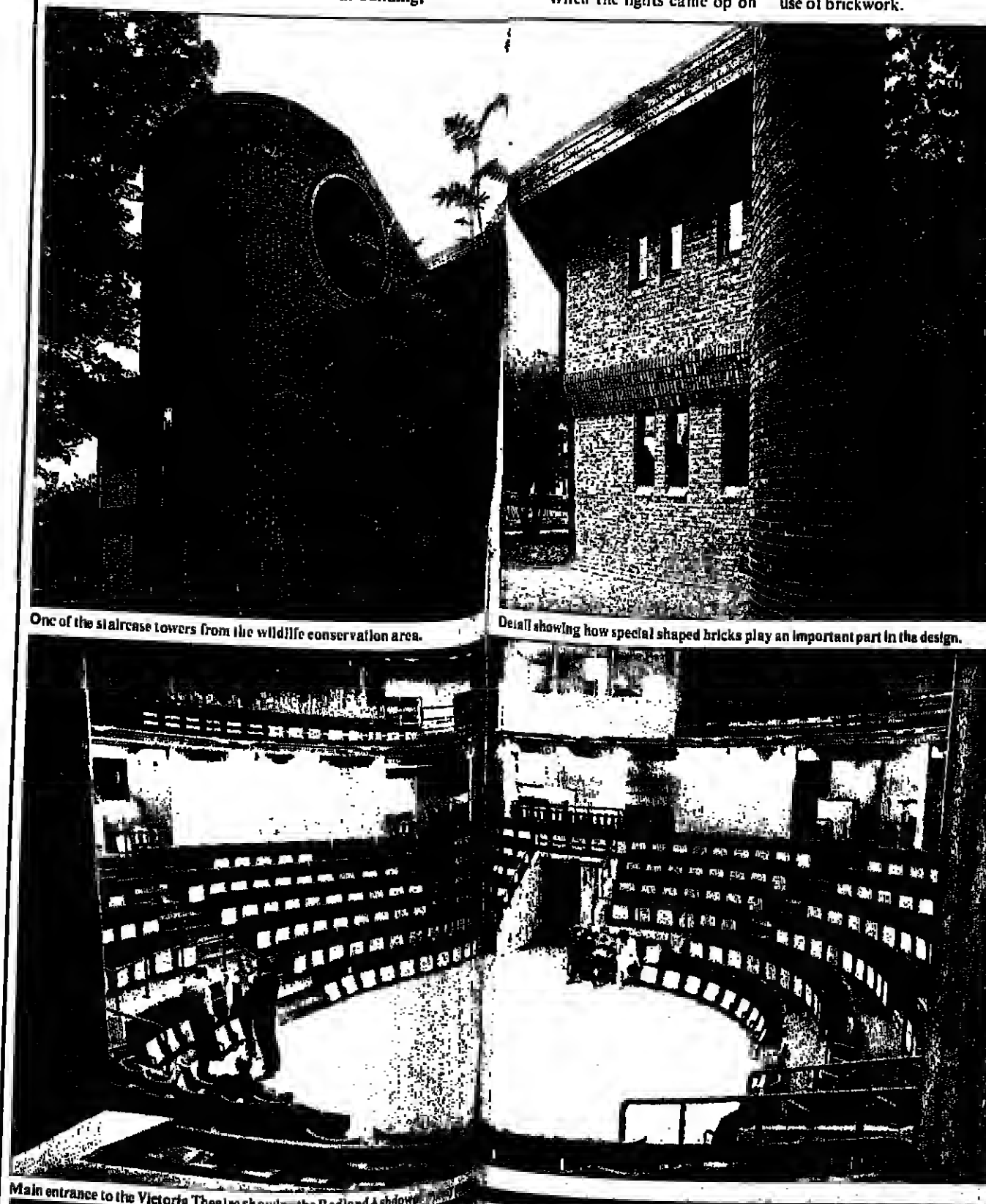


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One of the staircase towers from the wildlife conservation area.

Detail showing how special shaped bricks play an important part in the design.

Main entrance to the Victoria Theatre showing the Redland Ashdown

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Structural brickwork

THE TIDE IS TURNING

Getting the message across

STRUCTURAL brickwork was at its peak at the beginning of the Victorian era at a time when many of the great railway viaducts, retaining walls, bridges, sewers and docks were constructed. There followed a rapid decline caused by the advent of steel and reinforced concrete.

With these "new" materials' superior tensile strength at their disposal, the engineers of the day relegated brickwork to the status of a forgotten structural material, useful only for domestic buildings and as a cosmetic to face-up engineer-designed structures. Its decline has been so rapid that today very few graduate engineers receive any training in its structural use. When they leave university and go into practice, they are therefore likely to have a strong bias towards materials with which they are familiar, with little or no appreciation of the merits of structural brickwork.

Peter Lombard, a chartered structural engineer working for Istock Building Products, explains why structural brickwork is far from having had its day.

No engineer can retain all that he is taught in his academic years. He relies on good quality, readable textbooks. Many hundreds of such books have been published on concrete and steel — only a very few on brickwork.

Why, you may ask, should brickwork be brought back into prominence? Off the top of my head I can think of 10 good reasons:

● Brickwork has an unrivalled record of long-term durability. It is, after all, the second oldest building material in the world.

● If properly put together initially, it requires little or no maintenance, unlike its rivals.

● It is extremely robust and, if damaged, can be easily repaired. A lorry can run into the gable end of the building, punch a hole right through the brick wall, and the building will still remain

standing, because brickwork "arches". It must be the best structural material to sustain accidental damage, yet still retain its integrity.

● Steel and concrete frames in multi-storey buildings concentrate the loads at individual points around the building, necessitating large individual reinforced concrete bases, very often standing on expensive concrete or steel piles. A similar brick-built structure spreads its loads far more uniformly, generally only requiring a strip foundation — hence a saving in building cost.

● Brick structures, surprising as it may seem, are more economic to construct, provided that the building is suited to the material. Brickwork lends itself to use for buildings with repetitive floor plans.

● All buildings have walls, both internal and external. Generally the engineer looks upon these walls as either partitions or barriers to keep out the elements. He forgets their innate strength, which in certain instances, could take the place of an expensive frame.

● Brickwork offers the designer the freedom to use curved walls without incurring the excessive cost of curved formwork. Brick retaining walls are almost invariably less expensive than reinforced concrete ones, particularly as these are often in brickwork.

● With the recent emphasis on improved thermal insulation, it is beginning to be appreciated that brick/block structures can provide excellent thermal barriers.

● Diaphragm and fin walls are



Internal brick wall constructed of standard-shaped Accrington bricks.

proven economic solutions for sports halls, swimming pools etc — in fact, for most buildings requiring large, open areas, free from obstructions.

These are some of the good reasons for using structural brickwork. What is now needed is the impetus to do so. This could be provided by a new generation of brickwork-oriented engineers.

With the introduction of BS 5628: Part 1 and Part 2 (the first dealing with unreinforced brickwork, the latter with reinforced brickwork) the engineer now has two codes of practice with which to work, both written in the same language as their steel and concrete counterparts.

Brickwork is very like concrete in one respect. Without reinforcement both are excellent in compression and useless in tension.

Only the addition of reinforcement to concrete gives it its engineering magnetism. Reinforcement can also easily be added to brickwork.

Practising what they preach

ARMITAGE'S head office at Robin Hood, below the embankment of the upper reaches of the M1 just south of Leeds, is an unexpected example of exciting structural and architectural flair.

Like the recently completed offices at Accrington for another company in the Armitage Group, this is a tour de force of structural brickwork using techniques — such as reinforced brick beams and post-tensioned brickwork — which have been the all-consuming passion of Stuart Bell, Armitage's architect since he joined the company in 1978.

Bell believes that properly designed brickwork can be the most flexible and economic of structural materials for most two- or three-storey office buildings, for long span angle-roof buildings like swimming pools and sports halls and even for such engineering structures as retaining walls.

Bell's view is reflected by the

George Armitage & Sons offers a distinctive service which, says Stuart Bell, head of Armitage's technical services department, is set to "revolutionise brickwork". Paul Marsh decided to find out more for himself.

company for which he works. Armitage, possibly because of the nature of the bricks it produces — dense and exceptionally strong bricks from three brickfields in Yorkshire and one in Lancashire — is the champion of structural brickwork. As Bell points out, a whole generation of architects and engineers has been brought up to think of brickwork as merely facing material.

Eight years ago Armitage began to invest in research into the true strength of brickwork. Work has been carried out at its own factories, at Ceram Research at Stoke-on-Trent and other buildings up and down the country. Many of Armitage's early essays in structural brickwork took place in farm buildings — its first post-tensioned diaphragm wall, for instance, was constructed for a farm building in Norfolk.

Armitage has an impressive list of firsts to its credit including: ● first post-tensioned diaphragm wall farm building; ● first reinforced brick beam office building; and ● first reinforced pocket retaining wall.

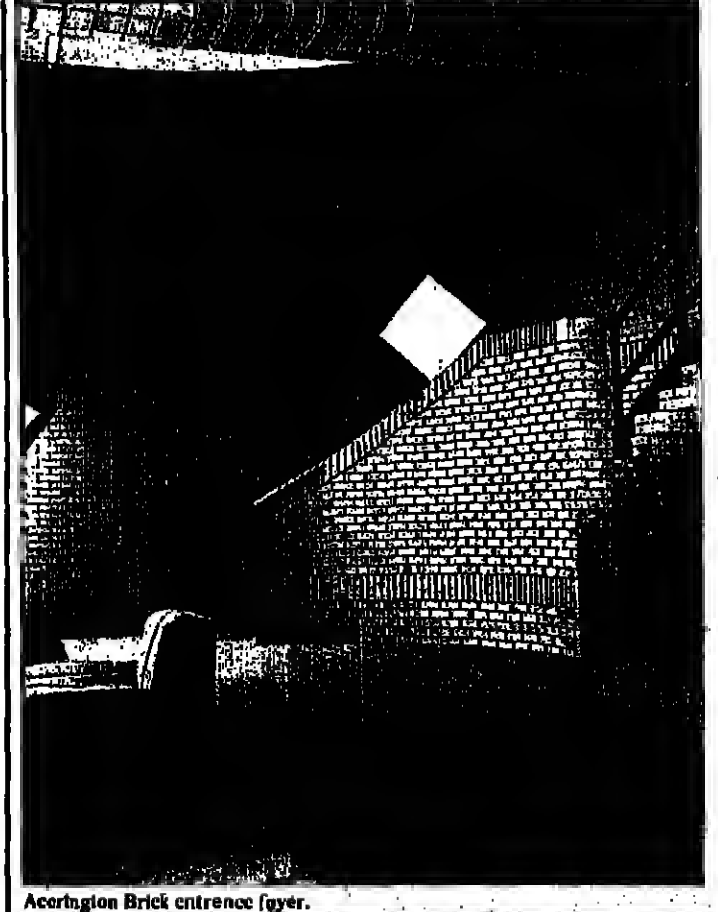
With this track record, it is hardly surprising that Armitage sees itself as something of an expert in the field and is busily spreading the word with in-house lectures and a video library service for architects and engineers.

In various ways it is chipping away at the widely held belief that brick is no more than an environmentally pleasing facing material and that to use brickwork as a structural medium must be expensive. It is this latter impression — that laying brick upon brick is a slow way to build and therefore expensive — that is the most difficult myth to overcome. And yet Bell will tell you that this belief is very wrong.

Loadbearing brick structures spread their loads more evenly on the ground than framed structures and therefore often result in reduced foundation costs. In addition, Armitage maintains that loadbearing brick construction can be quicker than full height brickwork, plus a steel frame. Also, where brick is used to clad reinforced concrete beams or retaining walls, an all-brick solution (reinforced concrete beams or reinforced pocket brick retaining walls) is invariably the cheapest.

The stair treads have been treated in the lower section of the stair as simply supported slabs, spanning 1,200mm from a half brick wall to the diaphragm external wall, or as prefabricated treads in the upper section, supported on a central spine beam. All treads are 140mm thick, consisting of two layers of solid bricks with tension reinforcement at mid-depth. Link reinforcement has been included in each joint to support the lower layer of bricks.

With the tide of design opinion apparently starting to turn in favour of structural brickwork, Stuart Bell is starting to look for new challenges to overcome. "We're just in a stream at the moment," he says, "but the stream is leading to a lake. The next hurdle will be the three- or four-storey office block!"



Accrington Brick entrance foyer.



The concrete blockwork wall under construction, showing the steel strengthening rods and wall's cellular structure.

Quiet revolution

John Wood reports on a new way to strengthen brick walls.

THE revolutionary method of strengthening brick walls developed by consulting engineer Bill Curtin (RD May 23) has been used in a concrete blockwork wall for the first time.

Curtin found a way of post-tensioning prestressed diaphragm brick walls using steel rods which gave a horizontal loading strength 300 times greater than traditional cavity walling.

Now an earth retaining wall 90m long and 3m high has been built on a site in Radcliffe-on-Trent in Nottinghamshire using concrete blockwork.

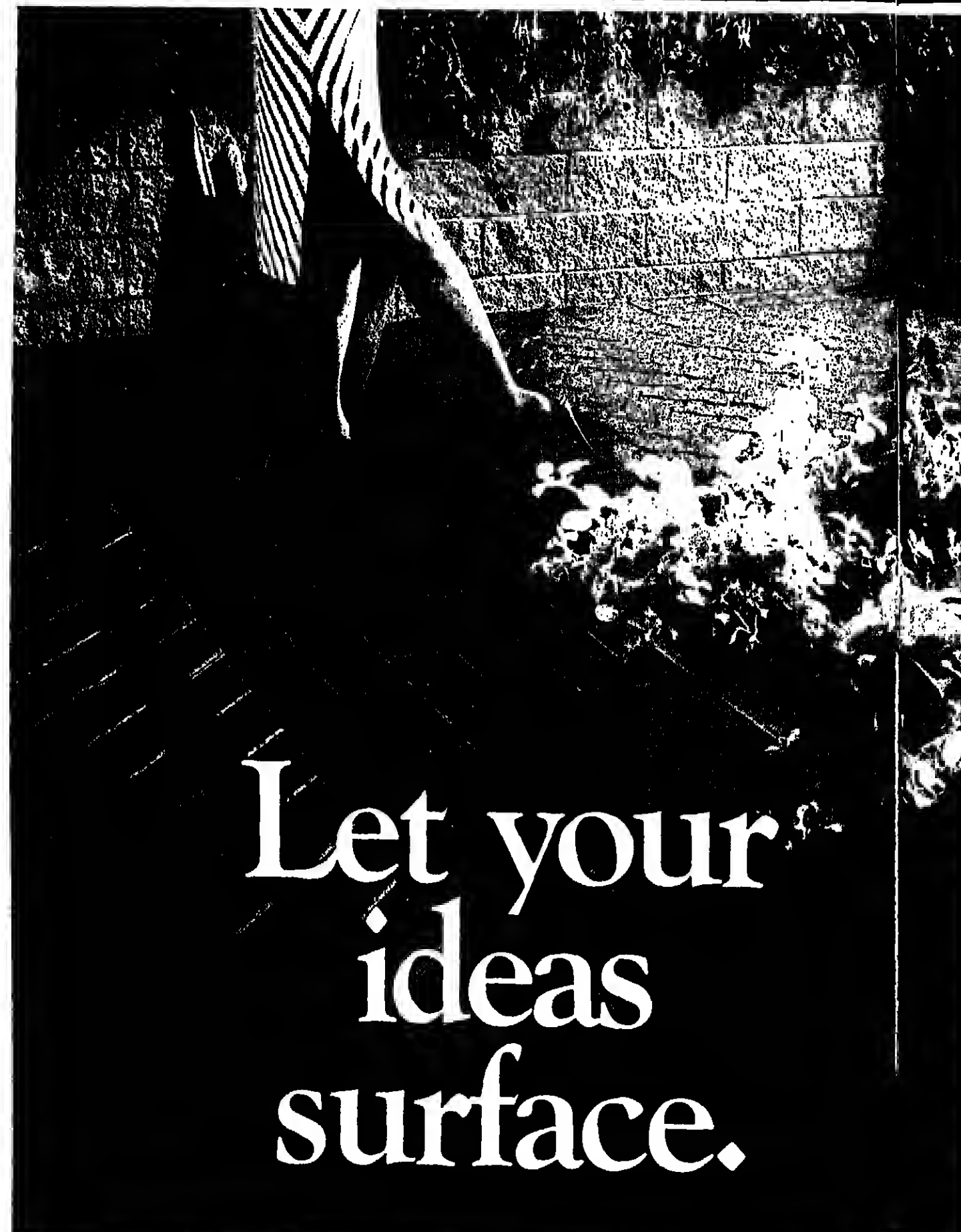
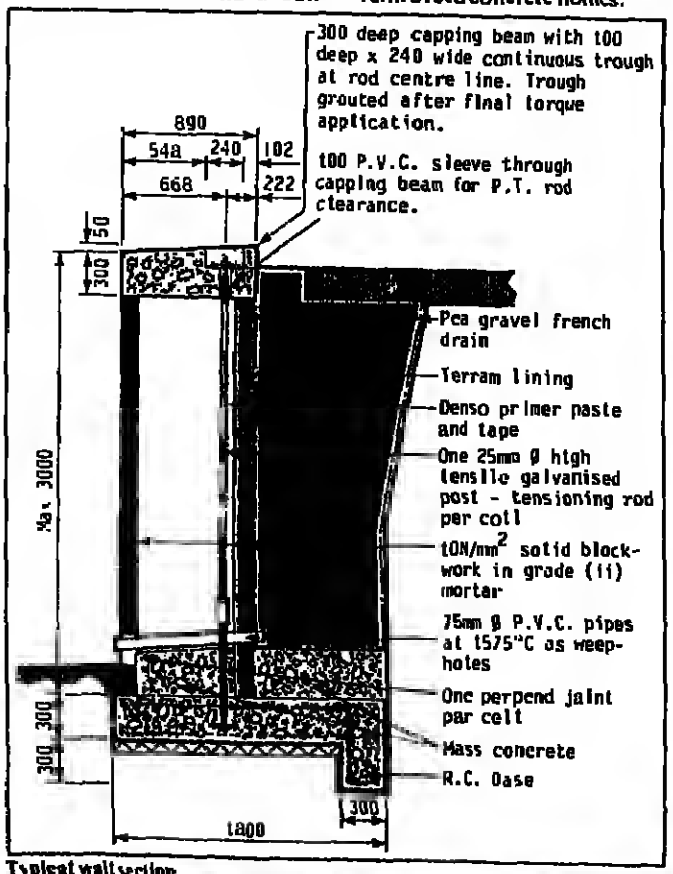
The wall was needed to allow gardens on the hillside housing development to be levelled-off, but the builder found a conventional reinforced concrete retaining wall would cost £4,000 per residence.

The blockwork wall was two-thirds the cost and the company, used to traditional house-building methods, was able to build it itself.

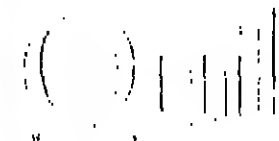
John Beek, a partner in Curtin's Consulting Engineers, will deliver a talk about the wall at the Institution of Civil Engineers during a symposium titled "Practical design of masonry structures" on September 23-24.

Earlier in the two-day event, Curtin will discuss the research into the initial post-tensioned prestressed diaphragm brick wall.

Curtin's has also been leading the way in the repair of precast reinforced concrete homes.



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Structures

SLIM STANCES

The Stoke Garden Festival has provided an opportunity to reassess the Slim method of domestic-scale building. Paul Marsh reports.

AT the height of the controversy between traditional brick-and-block and timber-frame methods of house construction, an entirely original method of domestic-scale building was launched by what was then called the British Ceramic Research Association (now operating under the title, Ceram Research).

The Single Leaf Insulated Masonry method (or Slim for short) never really attracted the imagination of designers and developers and quickly slipped from the limelight. But with this year's Stoke Garden Festival, there has been a new opportunity to reassess Slim in the form of the Solid Fuel Advisory Service's house on the exhibition site.

Slim, the brainchild which emerged from Ceram Research's interest in structural brickwork, was largely developed by its research architect, Alan Durose. He appreciated that the innate strength of the brick outer skin of the brick-and-block, or timber-frame, methods of construction was under-used. He argued that if a single skin of brickwork could be adequately insulated and the wall could be shown to resist water penetration, there was nothing to stop a well designed single skin (102.5mm) brick structure being structurally adequate for domestic-scale building.

The justification of this contention arose from many years of strength testing the brickwork of all types in Ceram Research's sophisticated testing laboratories.

If the Slim concept could be

shown to work in other respects, then, Durose argued, the method could yield important building cost savings — estimated to be in the region of 5 per cent.

Following initial laboratory tests, a single-storey extension to a house was constructed using Slim. This was monitored in use and found to perform successfully in respect of weather resistance and thermal insulation. Development continued and before long the method had been extended to two storeys and the time had come for a full, two-storey prototype. In 1981 Ceram Research built a pair of semi-detached houses on an exposed hillside outside Stoke-on-Trent. After wind load tests, one of the houses was sold and the other was used by Ceram Research to carry out two years of concentrated monitoring of thermal performance and resistance to rain penetration. At the end of this time, during which the house had been shown to have performed perfectly, it too was sold. It is understood that the owners of both of these properties are entirely satisfied with their purchases.

Ceram Research published a *Design guide for Slim* (cost £16) and waited for builders and developers to show an interest in the method. Unfortunately, so far as is known, only one

developer has ever opted to use Slim. This was a Southend builder who started to construct a site of Slim houses with the advice and assistance of the Brick Development Association and Ceram Research. After three houses had been constructed, he reverted to more conventional methods of construction. The reasons are not entirely clear. Certainly the time taken to learn the new method slowed down the builder's productivity on site, although he gave up just when he had got to grips with the method. In addition he failed to realise a cost saving — also due to the learning process he was undergoing.

At the time there was some adverse press comment, most of which was without foundation.

Probably one of the basic drawbacks of Slim is that some of its details are unfamiliar, they generate feelings of uncertainty. In effect Slim consists of a

102.5mm skin of brickwork backed by a 50mm thickness of Styrofoam, closed-cell polystyrene insulation and finished internally with plasterboard, which breaks joint with the Styrofoam boards.

Unevenness at the rear of the brickwork and the thickness of the adhesive dabs produce a notional cavity down which penetrating water drains, to be directed outwards at floor levels and openings by DPCs similar to conventional cavity trays.

Advantages offered by Slim include:

- Ease of supervision. It is easier to check the standard of workmanship than in a cavity wall. Cavity trays can be seen to be installed correctly before the Styrofoam is positioned.

- Speedy weather protection. The Styrofoam and drying line are both installed after the roof has been put on and the building is weathertight.

- Excellent insulation. It is relatively easy to achieve a U-value of 0.45 which it seems likely will become the mandatory Building Regulation value in the not too distant future. Using conventional methods of construction, this lower U-value could mean thicker walls. Small increases in the insulation thickness enable even lower values to be achieved.

The latter advantage no doubt attracted the Solid Fuel Advisory Service to Slim, when it was looking round for a method of construction for its Stoke Garden Festival show-house. There were other reasons too. SFAS had been involved in Ceram Research's prototype pair of semi-detached houses.

As Ian Warriner of SFAS puts it: "We were looking for a viable alternative to timber frame as practised in this country. We believe that Slim is a much better

construction than timber with fewer inherent long-term problems. What is more, it is quicker to erect than a conventional brick and block building and the walls are thinner than any other form of construction, providing the developer with the attraction of extra internal floor area or additional dwellings on site."

Warriner also points out that the use of brickwork internally, a feature of Slim and demonstrated in the Festival house, creates a thermal mass which helps to even out the highs and lows of temperature and reduce the risk of condensation.

In fact, with insulation on the inside surface of the external walls and heavyweight internal thermal mass, Slim succeeds in getting the best of both worlds.

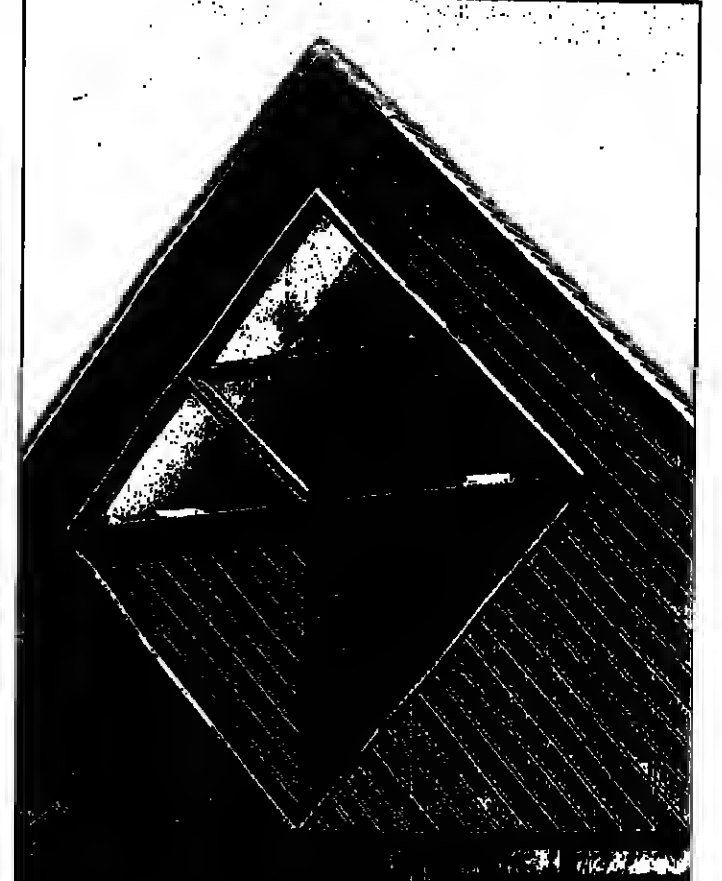
The SFAS house at the festival has proved a great success and the builder, A V Shenton of Normacot, Stoke-on-Trent, has expressed an interest in buying the property.

Now is the time to reassess Slim. As Alan Durose sees it, "Slim's problems in the past have been commercial rather than technical." It makes full use of the strength of brickwork, a feature that no other method can boast.

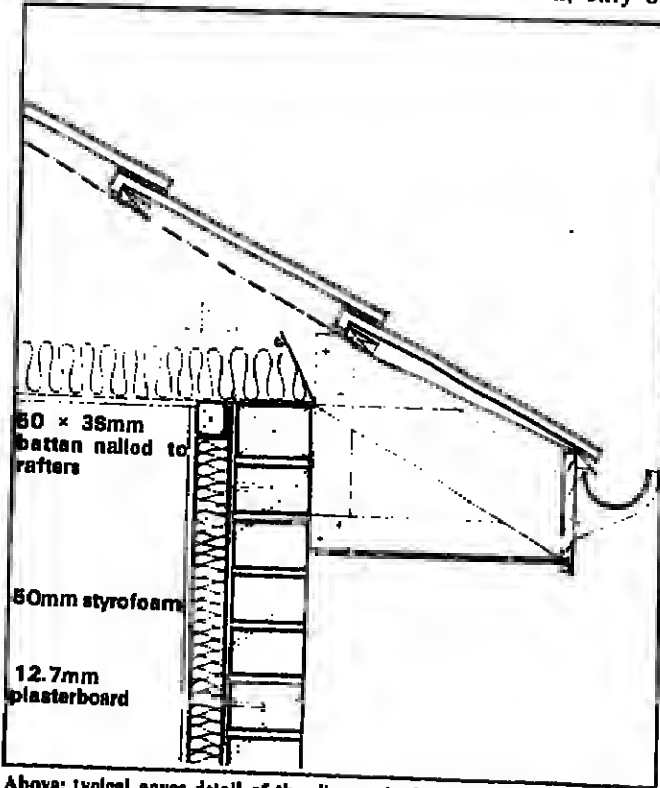
Structures



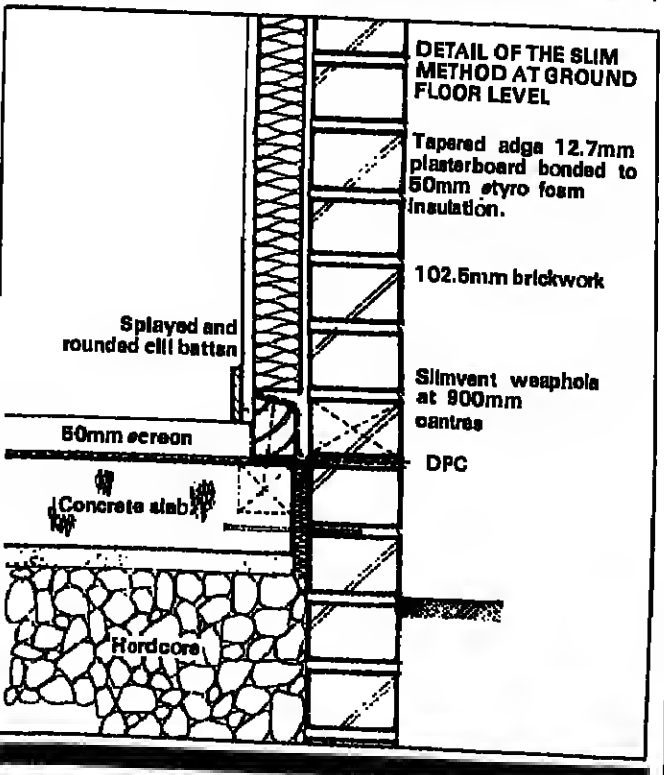
Prototype Slim semi-detached houses built by Ceram Research on the outskirts of Stoke-on-Trent in 1981.



SEAS house at the Stoke Garden Festival constructed using the Slim method.



Above: typical eaves detail of the slim method and below detail of the slim method at ground-floor level.



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STRUCTURAL AWARDS

Paul Marsh gives details of the most successful schemes in this year's Brick Development Association Structural Brickwork Awards.

Joint winner

Locomotive shed: Preston Dock Redevelopment. Because of the redevelopment of the former Dock Estate at Preston to provide opportunities for residential, leisure, retail and commercial building, the dock railway system had to be relocated. This system serves the existing industrial users in the area. As part of this relocation, a new engine shed had to be built to house the maintenance facilities required by the three dock locomotives — Energy, Enterprise and Progress.

This gave architects Brock Carmichael Associates the opportunity to design for their clients, the Borough of Preston, a functional brick building which, according to the award assessors, provided a fusion of architectural and structural excellence.

Operational considerations determined the position of the new building, which fortuitously linked with a flood protection scheme that eventually will form a heavily landscaped riverside walk. This renders the whole area visually sensitive and, as a result, it was the client's wish that the locomotive shed should set a high standard for subsequent development in the area.

The architects believed that a building like an engine shed, with such prestigious ancestors from the last century, should reflect its lineage in its appearance. To this end they chose to use the traditional materials of brick and slate, but serving them up in a late 20th century style.

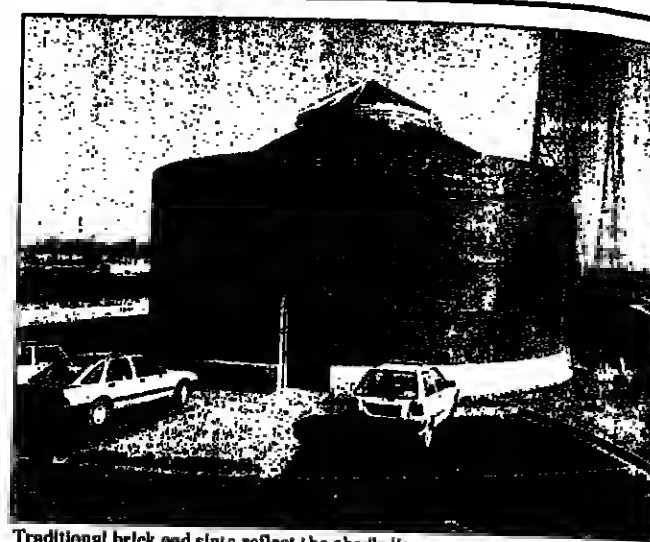
The use of the diaphragm wall construction engineer Roger Hetherington in many ways recalls the massiveness of the engine shed of the Victorian era, yet remains a totally contemporary structural statement.

The award assessors particularly remarked upon the originality of the steel roof structure, supported on precast concrete ring beam surmounting the diaphragm walls. The roof structure makes great use of tubular steel components and natural light inside the shed is provided by a glazed lantern.

The architects have made much use of arches in their design, while still maintaining a present-day appearance with such details as the semi-circular gable feature around the extract outlet.

Purity of the structural concept particularly appealed to the assessors in this case, as well as the boldness of scale of the design.

Bricks were supplied to the project by Blockleys and Lumley Brickworks.



Traditional brick and slate reflect the shed's lineage.



According to the assessors the shed provided a fusion of architectural and structural excellence.

Joint winner

Norwich Magistrates Courts and Probation Offices: Conservation issues played a major role in the design of the new Norwich Magistrates Court building, designed under the direction of the county architect, J F Tucker, by project architect Robert Goodyear.

Situated adjacent to the cathedral and an early 19th century mill (now Jarrolds Printing Works), the new court building had to be handled with great sensitivity. In addition, there was a planning requirement for an existing three-storey house on the site to be retained and incorporated into the design. This now forms part of the probation office. Archaeological remains of a Norman house have also been incorporated into a specially constructed basement.

Housing five adult and two juvenile and domestic courts, with all the necessary ancillary accommodation, this must be a rare example this century of a

major civic building built of loadbearing brick — a point noted by the award assessors. Although brick was chosen because of its sympathy with the surrounding development, the logic of its use was carried into the complete design, which was based on a brickwork grid. Not only did this reduce the cutting of bricks, it also led to a visual consistency that was even reflected in the design of the joinery.

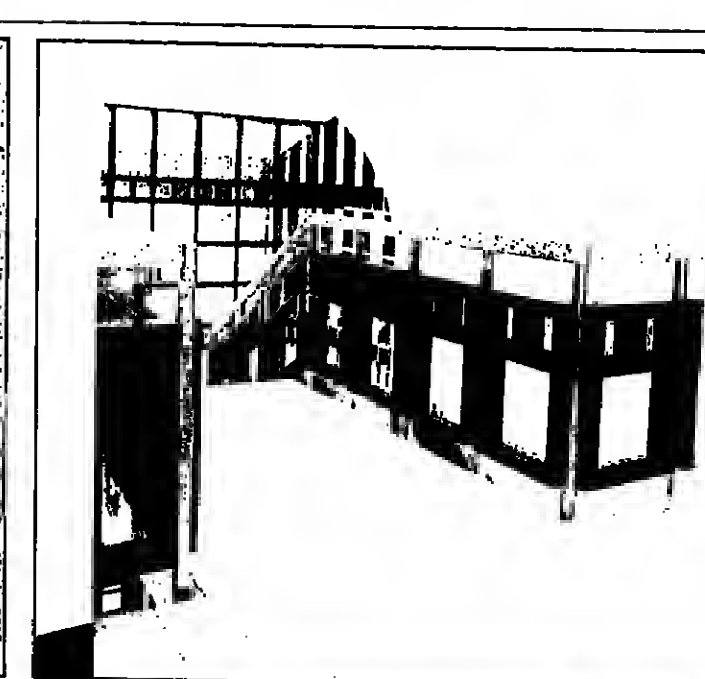
While the assessors noted that in some areas of the building the philosophy of the brick structure had been diluted, they accepted that this was necessitated by Home Office requirements for future flexibility of some internal layouts. However, they also noted the extremely high quality of brickwork produced by R G Carter.

Architectural constraints included the need to produce a low-maintenance building and one which was likely to improve in appearance with age.

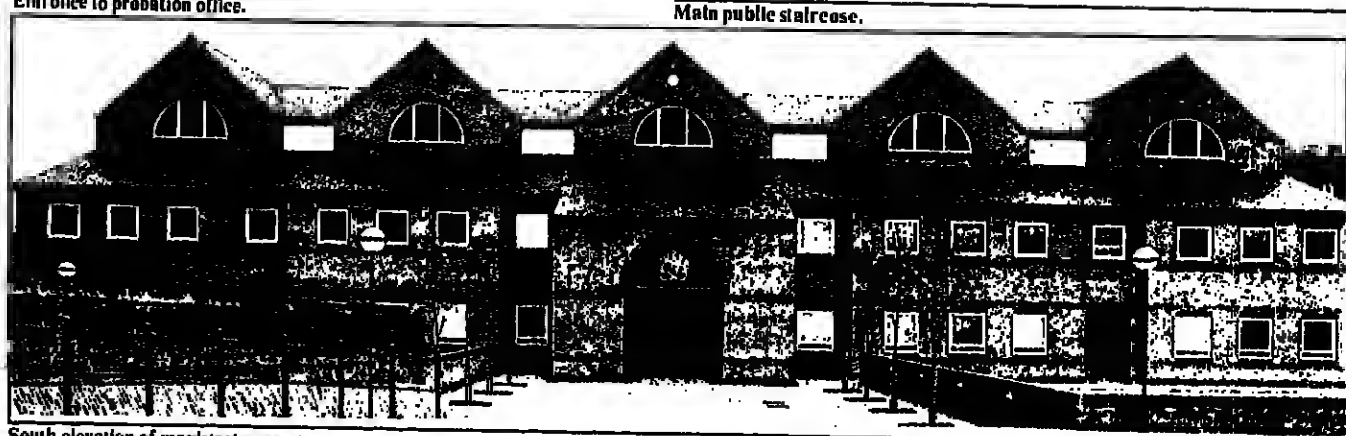
Structural engineers for the scheme are Eagling & Allen Partnership. Redland Tonbridge Wealden Stocks were used for general facing brick areas, with heads, sills, plinths and dentil courses picked out in Butterley Lane End Jacobean Blue Brown bricks in standard and special shapes. All internal brickwork is in London Brick Company common bricks, keyed to receive plaster.



Entrance to probation office.



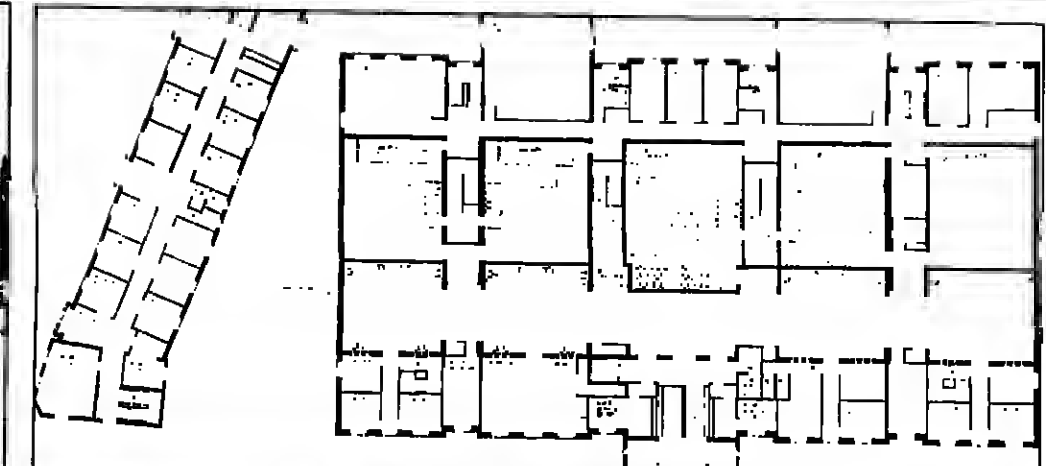
Main public staircase.



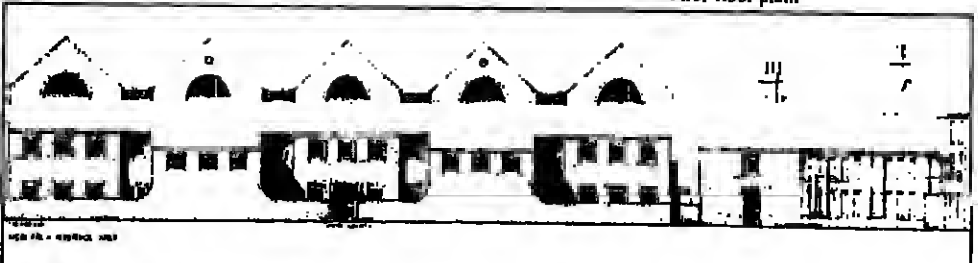
South elevation of magistrates court.



Probation office.



First-floor plan.



Perspective view from riverside walk.



View from Crown Court.

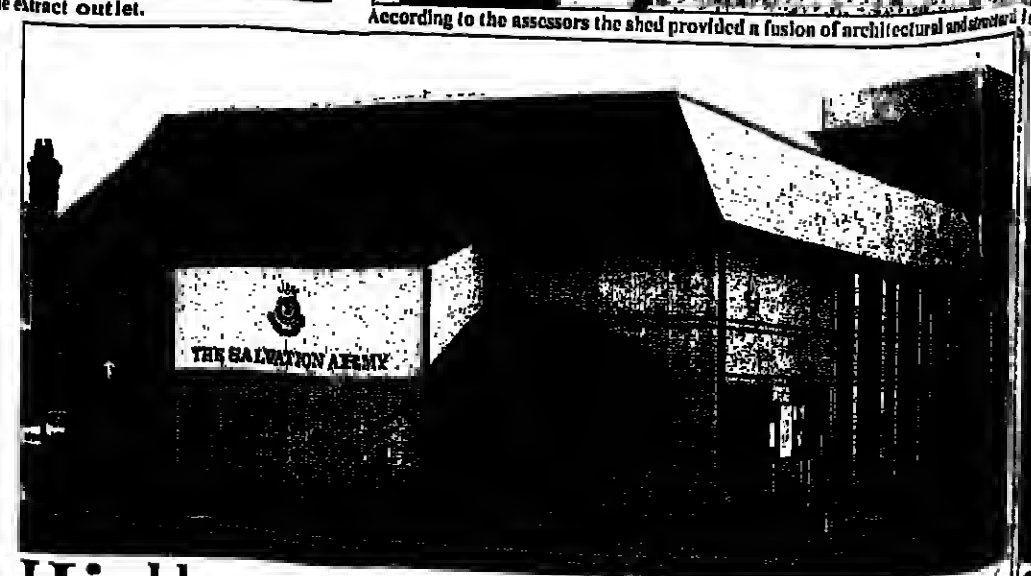
Highly commended

The Osborn Memorial Halls, Bascombe, Bournemouth: Major David Blackwell, the architect for the Salvation Army, in his design for the 600-seat main hall broke up the long, blank walls with brick piers. Because of site restrictions and the need to permit maximum natural daylight to enter the hall, these had to be of limited size.

Using the most up-to-date post-tensioning know-how, structural engineers W G Carter & Partners developed an economic structure based on reinforcing the brick piers with 20mm diameter

post-tensioned rods cast into the strip footing passing through the centre of the piers. They act as propped cantilevers and carry the cranked roof beams which span the hall. Because the roof transfers the wind loads to the gable end walls.

Major Blackwell's design included, as well as the main hall, subsidiary halls and community rooms. Externally it was intended to reflect the scale of the property surrounding the site. The manufacturer: Severn Brick Company.



Commended

Rushden Fire Station: All-brick construction used in this new fire station in Northamptonshire (architect John Gammons, director of the department of land and buildings, Northampton CC; engineers BMMK Cotterell) is believed to have shown substantial cost savings when compared with more usual framing methods that might have been considered for this type of building.

Many loadbearing structures depend on a cellular arrangement of walls and their interaction with the floors and roof to provide stability.



This facility was not provided in the appliance bay/wash-down area, which was enclosed on two sides by tall, unbraced walls without returns. Alternative methods had to be sought.

Stability is provided by post-tensioning a thick brick diaphragm wall which also props, via the roof structure, the non-enhanced diaphragm wall opposite.

Bricks were supplied to this project by Butterley Brick.

Commended

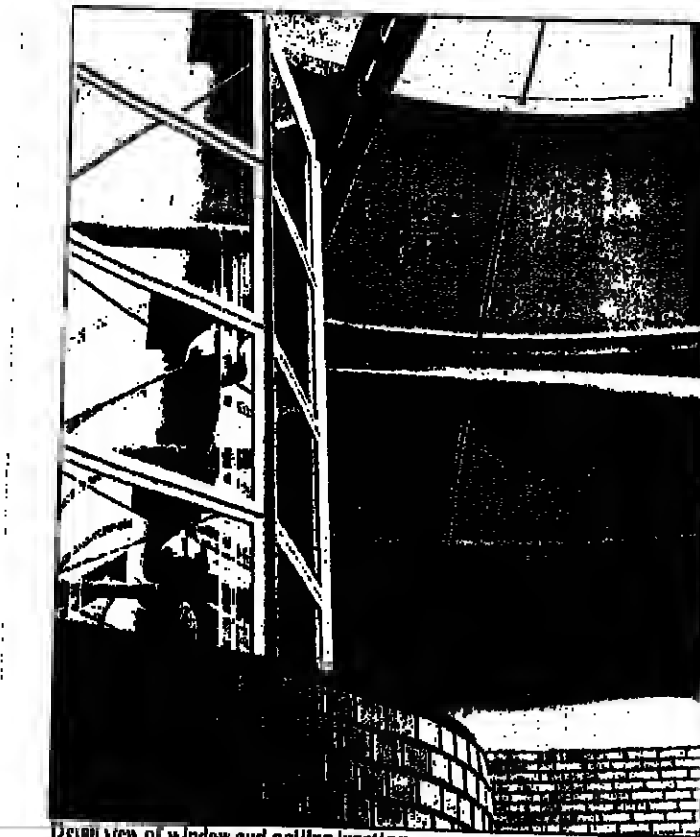
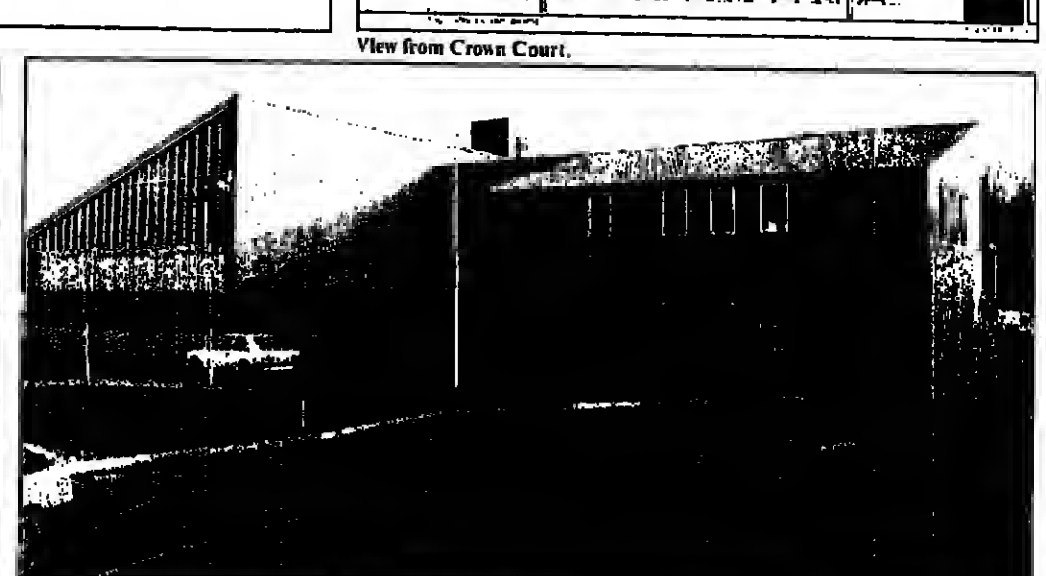
Banbury Inner Relief Roads, Stage 1, East-West Link Road: Information obtained from recent work carried out at Ceram Research, Stoke-on-Trent, made a vital contribution to the design of the underpass wing walls, constructed of reinforced brickwork.

There are three major bridges and one underpass on this section of new road and the design of the underpass walls was the work of Oxfordshire County Council county surveyors department (J Deverill-Cooper, county surveyor

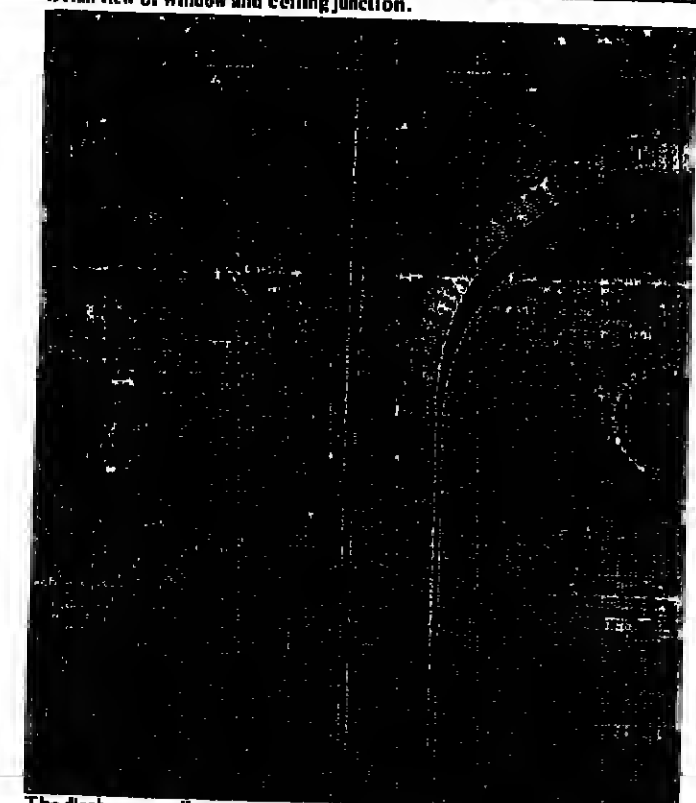
and engineer) with the assistance of brickmakers George Armitage & Sons, consulting engineers Bradshaw Buckton & Tonge, and Dr G Edgell of Ceram Research.

The walls were constructed of pocket-type brickwork, using high yield steel reinforcement, concentrated in vertical pockets formed in the tension face of the brickwork.

These pockets are then filled with concrete. Additional mild steel shear reinforcement is also fixed in the pockets.



Detail view of window and ceiling junction.



The diaphragm wall construction recalls the past but remains contemporary.



Semi-circular gable feature around the extract outlet.



Interior view.

18 BUILDING DESIGN Bricks Supplement 1986

People

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The brick business abounds with individualists who share a passion for burnt clay products. Just three of them explain their fascination.

For fun and profit

FRED Cond has 20 years of experience in the brick business. This (and his resolution never to ignore a challenge) makes him one of those backroom experts who keep British brickmakers at the forefront of the brick business.

Cond is very modest about his skills. According to him, anyone could do what he does. But he is an unusual man: on one hand, the designer of unique brick testing equipment; on the other, a self-taught sculptor whose skill lies behind most of the decorative terracotta work that his employer, Istock Building Products, produces.

One example of his inventive achievements is a device which simulates experimentally the heat drying programmes for wet clay.

Different brick clays need to be dried in different ways before firing, if defects are to be avoided. In the past, each brickmaker knew his own clay from years of familiarity, but as the need to use new clays, or clays from different beds, has increased in the industry, so brickmakers have been forced to take a more scientific attitude towards drying clay. The old-fashioned rules of thumb are no longer good enough.

Textural characteristics of wet clay — whether it is fine or granular — affect the way the "green" brick should be dried before firing. Some clays can be dried in relatively normal humidities; others in such environments dry too quickly on the outside and remain wet inside, leading to internal stresses and cracking. If, however, "green" bricks of this fine type of clay are dried in a humid atmosphere, the speed of surface drying can

beheld back, while the temperature is raised. Finding the correct adjustment can be an expensive, prolonged, empirical operation with many test firings of sample bricks taking place in small kilns. If the correct drying regime can be established in the laboratory, considerable expense can be saved.

Unfortunately, there was no machine on the market for trying out a variety of drying programmes on unfamiliar clays. Istock Building Products was well aware of this lack and asked Cond to look into the development of appropriate apparatus.

He came up with what has become known as "Fred's steam machine". Small cubes of wet clay are subjected to many different types of atmosphere — either humid or dry at varying temperatures — establishing in miniature the correct drying programme for a clay, long before the first brick is fired.

Other equipment designed by Cond includes a durability rig. This subjects bricks to freeze/thaw cycles, which carefully mirror natural conditions — freezing takes place on one side only of the brick.

"Frost resistance is an art, rather than a science," he says. "Some hand-made bricks look as if they'd stand up to nothing, and yet they are as durable as any brick made."

Istock tests its bricks through 100 freeze/thaw cycles over a two-week period. Cond emphasises that conditions in the UK are particularly severe, with repeated cycles of freezing and thawing.

Many other pieces of test equipment in Istock's laboratory have been devised by Cond — the mechanical engineer who

started work in a tool shop and has worked for Istock for more than 20 years in a variety of capacities. It is hardly surprising that when Istock in 1984, went into decorative terracotta work Cond should have been called upon to find ways of producing the tulip-patterned bricks, plaques and rose bosses for which Istock has become rightly noted.

Today he spends much of his time acting as a sculptor, carving the intricate masters from which the plastic moulds are made for a vast range of decorative motifs — from architects' plaques to brick sundials. Unbelievable as it may seem, he never had any training as a carver.

"I think I'm very lucky," says Fred. "Others do it for fun; I get paid to do it."



Fred Cond at work on his "steam machine".

People

Portrait of an artist

EARLIER this year Walter Ritchie, working in his outdoor studio at Kenilworth, protected by a sheet of polythene, completed what is believed to be the largest hand-carved brick sculpture in the world (see *Perspective*, page 10).

There are bigger examples, but these have not been carved in the fired brick — the method favoured by Ritchie; they have been formed in "green" bricks before firing. Ritchie's latest brick sculpture consists of five panels, totalling 20m in length and 2.4m in height, all worked with hand tools. "I'm not against power tools as such," he says, "but the hammer and chisel are still the best. Sculpture is a matter of co-ordination between brain and hand." A greater depth of sensitivity, he believes, can be achieved with hand tools.

For the best part of 50 years he has lived and worked in Kenilworth, much of his early sculpture being commissioned by the County of Warwickshire and the City of Coventry. Two examples of his work of this



Walter Ritchie — "you can't delegate". period (sculptures in Portland stone of which he is no longer proud) appear in Donald Gibson's Coventry Shopping Precinct.

He works alone and unaided, except for the very special bricklayers who are vital to his brick sculptures. As he explains: "It's important, if you do a thing which is sensitive to you, that you do it yourself. You can't delegate. I like to keep my options open and the design may change considerably during the process of carving."

Sensitivity is a word which crops up often in Ritchie's conversation. Much of his better-known work is in brick, but his materials range from gold to granite and include a 5m x 4m intaglio relief in Napoleon marble in the NatWest Bristol City branch and a large revolving bird sculpture in sycamore at a branch of the same bank in the centre of Worcester.

Ritchie's first brick sculpture was carved into a wall of a school — the intention being to provide visual interest while economising in material. This was the beginning of a succession of similar sculptures. He finds many types of brick "eminently carvable and weather better than many stones in adverse atmospheres". He likes working in brick because his sculpture becomes an integral part of the architecture; also brick introduces colour into sculpture.

A happy chance meeting in 1971 with the then chief information officer of the Brick Development Association, Roy Edwards, marked a new phase in the linking of Ritchie's name with brick sculpture. There followed a series of commissions for pieces for the BDA stand at Interbuild exhibitions, starting in 1972. These drew the attention of a larger audience to his work. These pieces included the well-known large "sequence" sculptures — "The Adventures of Lady Sarah Wellington-Gore" and "A day in the Life of Atalanta". Ritchie today refers to these in his characteristically self-deprecating manner as "large artp cartoons".

In one of his books (*Sculpture in brick and other materials*, Peter Dix Associates, 76 Willis Road, Leamington Spa) Ritchie has encapsulated his philosophy of the relationship between sculpture and architecture. "I want my work to be for buildings, or 'in the street' rather than in art galleries." And what does he think of modern architecture? "I like the purity of modern building," he says, referring to Mies van der Rohe's work, "but not its emptiness. I would have to add sculpture."

At present Ritchie is resting after his five-year stint on the Bristol sculpture. At 67 years old, does he find that the physical effort involved in major sculpture is becoming more tiring? "It's something you don't notice," he smiles. "I worked through last winter out of doors on the Bristol sculpture, only losing a week because of the cold. It's not only the hands; it's the brain which freezes up." And what's next? He shrugs. At the moment he is working on a book and some jewellery. Generally he feels that he may take a rest from brick sculpture for a while at least.

Ritchie does not court the limelight. At the official unveiling of his work at Bristol, he watched the ceremony, unnoticed, from the other side of the street — a very typical action for this very talented and self-effacing man.

Last of a breed

PETER Kirk, managing director of Normanton Brick, has been in brickmaking for more than 30 years.

His small, highly traditional business in the Wakefield area produces pressed bricks from coal measure shales in much the same way they have been produced for decades.

Normanton Brick seems hardly to have been touched by the passage of time. Bricks are still moved in and out of the kiln on wheelbarrows — a real throwback to yesteryear. Yet scratch below the surface and you will find that all is not as it may seem at Normanton Brick.

Its ancient traverse-arch, coal-fired kilns, for instance, have been converted to make use of a supply of methane gas from a municipal rubbish tip about half a mile from the brickworks. Currently, according to Kirk, about 30 per cent of his kilns' energy needs are supplied by local authority refuse. This supply he expects to continue for at least 10 years.

Normanton Brick is one of the few remaining genuine pressed brick manufacturers still in production. Once its bricks, with the distinctive frog of the old pressed brick, were delivered within a 30-mile radius of the brickworks; now they are taken anywhere in the UK. They are particularly in demand where there is a need to match existing pressed brickwork. To this end, Normanton Brick has always been prepared to be versatile in its approach to brickmaking.

As Kirk explains: "If they want a brick with a face scratched with a saw blade, we'll do it." This versatility has kept Normanton alive, despite the demise of all the rest of its local competitors.

One of its two brickworks dates from 1893; the other was built with money derived from compensation payments when the coal industry was nationalised after the last war.

And what of the future? Has Kirk any intention of expanding in the brick business? Possibly not; although the supplies of landfill gas are growing, he is looking around for other uses for this inexpensive asset. To turn the extra gas into bricks would mean building new kilns — a strategy which is not in his future plans.

"We're practically the last of the pressed brickmakers," he says. "When the decline in demand for pressed bricks bottomed out, it left us with a market we could easily satisfy. We don't need reps to sell our bricks — they sell themselves."



Peter Kirk — "our bricks sell themselves".

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A sundial in terracotta designed by Cond.

Special 1986

Development

GROWING PLANTS

Brick producing plant is still attracting corporate funding. Paul Marsh looks at developments in production.

INVESTMENT by brick-makers in new plant has been running at a very high level for the last few years. This trend has continued in a slightly reduced form this year.

Among the developments which have been announced are a number of investments made by Butterley Brick. These include a £1 million development at its Blaby works, mainly

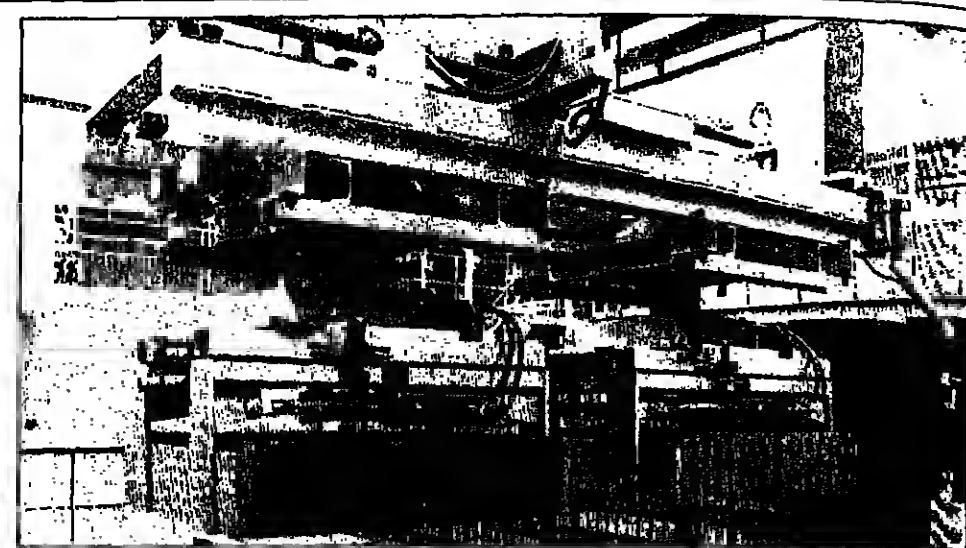
comprising a new kiln, built to a design patented by the Butterley Group.

Its construction involved excavation to a depth of 8.2m over the site of the new kiln, because of the extremely poor ground conditions in the area. The kiln, which is 51m long, was constructed using several of Butterley's own products, such as 140,000 engineering bricks from its Waingroves works and refractory bricks from its Black-

ley plant at Elland.

The new kiln will allow the Blaby works to double its output of handcrafted bricks, firing in excess of 400,000 bricks and special products per week. Future investment at Blaby will include the installation of high capacity dryers and an extrusion line. New moulding departments are also planned.

At Butterley's Waingroves plant a £300,000 investment has included the installation of



Automatic Lingt brick setting machine in Bagderidge Brick's new Hartlebury plant.

automatic firing systems for its kilns which permit accurate control of firing temperatures throughout the period the bricks are travelling through the kiln (an average of 48 hours). New setting equipment for loading the kiln cars will also be installed later this year.

Other developments at But-

terley Brick factories include a new gas-fired, fibre-lined, energy-efficient kiln at its Lane End works in Clwyd and a new tunnel kiln at its Arlesey works in Bedfordshire. This will produce 340,000 bricks per week and is partly fired by methane gas from a landfill project in an adjacent quarry.

In what has been a period of extremely high investment, Steelley Brick & Tile has spent £1 million on the creation of a new special brick plant at its Chesterton brickworks in North Staffordshire. This will allow special- and standard-shaped bricks to be produced in the same plant and from the same batch of raw material. Previously, special shaped bricks delivered with Chesterton standard bricks were manufactured at the nearby Brownhills plant.

In common with all Steelley's other main brick factories, the new special facility will contain highly automated and micro-processor controlled plant and shuttle kilns.

Blue brick manufacturer Bagderidge Brick has followed the opening last year of a new blue brick production plant at Kingsbury (Brick Supplement September 1985) with the construction of a major new plant at its Kingsbury and Sedgley, which use Etruria marl for the manufacture of high-quality engineering and facing bricks of great strength. Hartlebury's source of raw material is superior Keuper marl from which it is making ML quality facing bricks.

The new plant will initially produce 25 million bricks per year and this is scheduled to double with a change in the plant's working practice.

From the new Hartlebury factory, which was built and commissioned in less than a year, Bagderidge Brick will be producing a new range of "fashion" bricks — pseudo handmade bricks at extruded brick prices — particularly aimed at the housing market.

Major equipment suppliers to the project were Haendle, for clay preparation plant, and Lingt UK, for brick handling equipment, dryers and the tunnel kiln.

From the Haendle extruder, the clay column is cut into 17,400 three-hole perforated standard bricks per hour. The clay column can be dragged textured, roller textured, sand, given a combination of the three treatments, or simply left smooth.

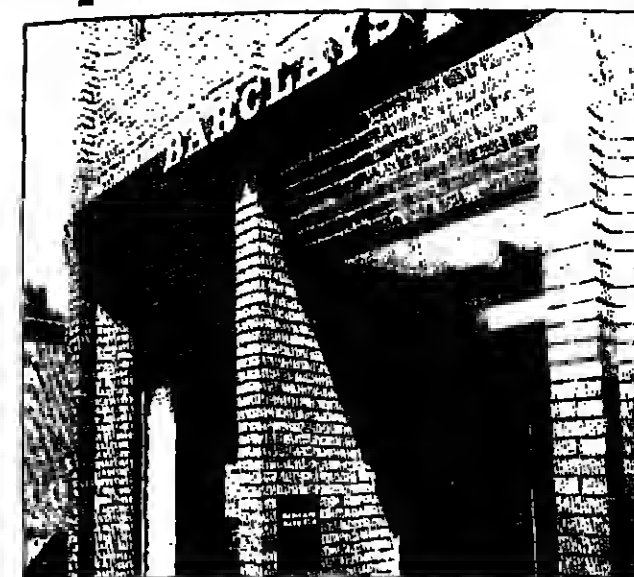
The Lingt tunnel kiln is 99m long and each kiln ear takes 50 hours to pass through the firing sequence, which reaches a maximum temperature of 1,050deg C. All handling of green or fired bricks is automatic and, during the unloading of the kiln ears after firing, alternating top and bottom kiln packs are placed on to the two conveyors, thus obtaining a representative blend of colour in each transport pack.

The new plant at Hartlebury is the second phase in a development which started last year with the opening of the new Kingsbury factory and will continue in the next 12 months with further developments at Bagderidge's Sedgley plant.



Butterley Brick's new Blaby kiln.

Slip brick stick-up



CONCRETE-encased floor beams and columns of the new branch of Barclays Bank at Eastleigh, Hampshire, have been discreetly covered with 13,500 brick slips and cant bricks. The slips were stuck in place using SBD Epoxy Plus Putty and cant bricks, forming the orobling, were fixed with stainless steel ties and a thick bed of Epoxy Plus Mortar. All necessary soft joints were incorporated to cater for building movement. Steelley

Etruria Mixtime red facing bricks were used with matching 25mm-thick slip bricks and cant bricks. (Architects: Newman Marshall of Purbrook).

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Third gold medal



At the Chelsea Flower Show this year, Woolworth, for the third year running, carried off one of the coveted gold medals. Also for the third year, designer David Stevens chose Redland bricks for his garden.

contrasted well with the pre-cast paving and abundant greenery.

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Vista closer



In the true Palladian tradition, the tower of the new 4,200sq m office development in Taunton for close the vista down the High Street. The architects for the development, the Bruges Tozer Partnership, use the tower to link the two terrace wings of the scheme. General wall surfaces are faced with handmade Swange bricks, while the yellow bricks used

to pick out the details of the elevation are from Istock Building Products.

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Products in practice

Herb garden pavers



HOLLINGTON Nurseries' garden at this year's Chelsea Flower Show was a formal culinary herb garden, designed by Simon Hopkinson. He used Ashdown Crowborough Flex-pavers from Redland Brick to construct the path which separated the various garden areas, creating diamond-shaped herb beds. The subtle colours of the multi-coloured pavers blended well with the leafy herb plants.

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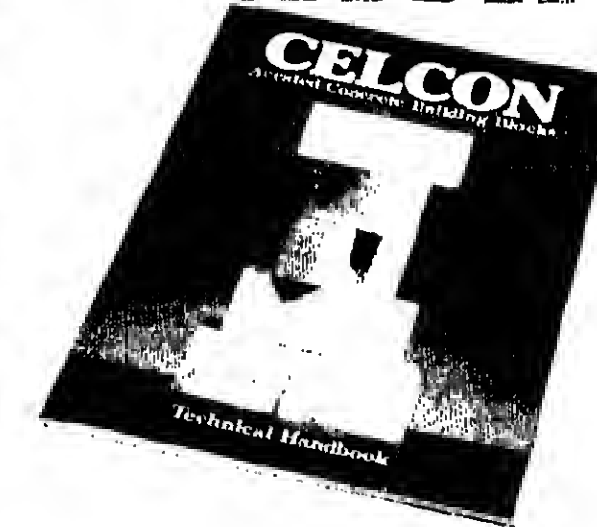
Curved brickwork



ACCRINGTON Brick & Tile's new office block is designed to show off some of the capabilities of structural brickwork, using products from the George Armitage Group product range. Particular features of the design (architects: Fletcher, Ross & Hickling of Leeds) is the curved brick walls, contrasting with the Don Reynolds glazed curtain walls, designed to read flush with the brickwork. The glazing incorporates grey tinted glass in vision areas with "lookalike" glass spandrels.

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openings can neatly be built with clean-cut Celcon fractions. Light though it is, Celcon Solar has a strength of 2.8 Newtons per square millimetre. Celcon Standard exceeds 4 Newtons per square millimetre and Celcon High Strength, 7 Newtons per square millimetre. In practice this means you can build a block of three-storey flats entirely from Celcon, including the walls below dpc.

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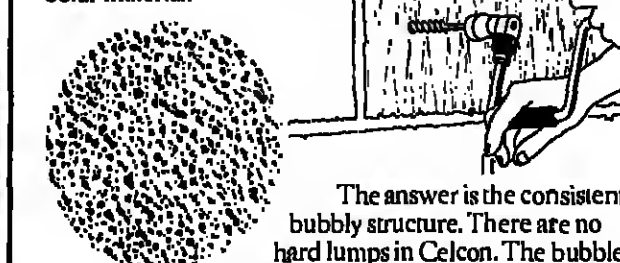
For the stockist and his small job customers, Celcon is shrink wrapped into small easily fork-lifted HandiPaks.

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These are just a few of the useful bits of information you'll find in the Celcon brochure. A copy of the book is yours for the asking. Even when you've got it, don't forget the Celcon representative is always nearby ready with his fund of knowledge and practical experience or to take your problem to the Celcon technical service.

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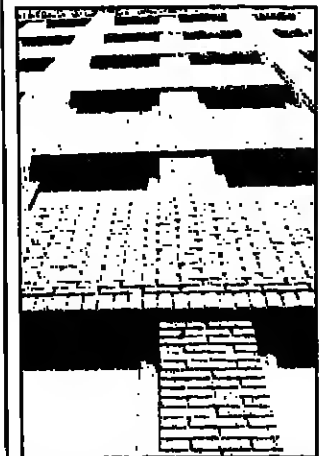
Calcium silicate solution



MALLING Red facing bricks in Rysh Brick's Village range were used in this Georgian-style detached house, one of several on a development in Benfleet, built by Brian Bennett Construction. Rysh produces calcium silicate bricks in three ranges: smooth Sandtime, lightly textured Flintline and the smooth or textured Village range. Several facings from the latter range were used on the Benfleet development.

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Special cladding fixings



BAKERS Hall in the City of London has had a chequered career since the original building was destroyed during the Great Fire of London. Rebuilt in 1760, bombed in the Second World War and rebuilt in 1960, the present building has just undergone major refurbishment which included the replacement of the pre-cast concrete claddings with brickwork. A new form of fixing had to be devised to support the brick and block cavity wall at each existing column. Fixings specialist Harris & Edgar came up with a solution which provided the right degree of tolerance to overcome variations in the existing concrete structure.

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Inside arch story



BECAUSE the brick arched windows of the new Crest Hotel (architects Brerly Leckenby Keighly Groom) were precision made, it was important that the arch reveals were accurate in shape and size. As a result, Truline Building Products' arch frames were chosen. These are said to be the only arch frames on the market with solid bead edges, which provide a guide for the plasterer to obtain the exact size of arch reveal. They are manufactured of galvanised and stainless steel for interior or exterior use.

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Brick reinforcement

SPIRO-BAR masonry reinforcement from Rom is manufactured from stainless steel strip (type 304 S31 to BS 1449, 1983) twisted to form a helix. This, it is claimed, has a longer life than galvanised or plastic coated products. It is supplied in 3m lengths to be cut on site, each length weighing 0.18kg. The yield stress of the strip is 460 N/mm², its cross-sectional area is 7.6mm² and typical bond stress with designation (i) and (ii) mortars is 1.5N/mm².

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Cavity trays

MANY types of cavity trays, for inserting in existing walls and for use where a roof abuts a brick wall, are available from Rom. All are factory made to a consistent and high standard. They are easy to install and simplify the supervision process. There is no need to use adhesives or bonding materials. All the trays are made from black polypropylene, 1.4mm thick. They are flexible enough for easy pinning, but rigid enough to be self-supporting.

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Reclaimed look-alike

WITH an overall red colouration, the new Buttington Heritage Mixture facing brick from Butterley Brick is reminiscent of the effect created by reclaimed bricks, displaying a wide variety of colour tones and textures. Produced at Butterley's Poyys works from Llandoverly shale, the new bricks are of FL durability classification and are produced in the standard metric or Imperial sizes.

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New colours and textures

GEORGE Armitage & Sons Ltd introduced variations to its facing brick ranges. Its red and brown Ebor smooth facings are now complemented by a smooth buff and a smooth buff multi, while the varied hues of reds, browns and blues in the Oerwent Multi range are now available with a dragwire surface texture. The Armitage Oulton Mixture has the appearance of a stock brick, but with the strength and durability associated with Armitage bricks.

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New products

Dragwire pavers

PRODUCTION of Armitage red and brown pavers has been switched to the new factory of its subsidiary company, Accrington Brick & Tile. These pavers have a dragwire texture and are 200mm x 100mm x 50mm with square or chamfered arrises, depending whether they are to be laid in mortar on a sub-base of concrete or are to be set on a bed of sand.

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Ready-to-use mortar

SUPPLIED in a range of 20 colours (with up to six shades in each), Stealey Brick & Tile's new ready-to-use sand-lime mortar remains usable for nearly five times as long as conventional mortars. Sealed in 30kg bags, which if left unopened can be used for up to seven days after delivery, the mortar conforms to BS 4721 and reduces site wastage to a minimum.

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Concrete bricks

PEAKSTONE Bricks has announced the introduction of its engineering quality concrete brick with a minimum crushing strength of 40N/mm² and a maximum water absorption of 7 per cent. This brick is recognised by the new BS 5628: Part 3 as suitable for the severest applications in drainage and sewerage.

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Keuper marl facings

ALL Nottingham Brick's keuper marl facing bricks have been collected together under the range name of Mercia. The new Oxton series has been added to existing bricks: The Oxton Red and Red Multi both have a lightly folded texture, the Oakham Mixture with its blend of colours has a traditional appearance and finally there is the Georgian Multi Rustic.

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will be published on
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Material for
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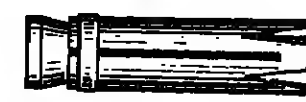
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Two new stocks

AUGMENTING its range of stock bricks, Redland Brick has introduced two new facings — the Ashdown Rotherfield Multicoloured stock and the Ashdown Mayfield Multicoloured stock. Both bricks are of the FL quality classification — the Rotherfield facing complements the traditional Crowborough stock, blending with most other materials and environments, and the Mayfield has many of the characteristics of the Pevensy family, in sympathy with much of Britain's red tradition.

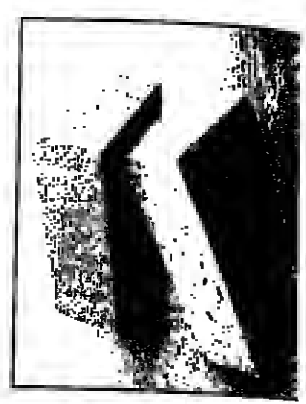
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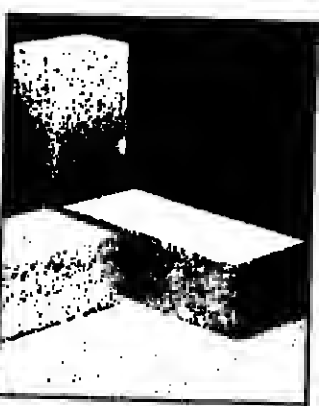
West Midland bricks

REDLAND has announced that two new facing bricks of FL quality are being produced by its massive Stourbridge factory — the Earlswood Textured Buff and the Stratford Sandfaced Red. The former has a drag-faced finish and deep, warm tones appropriate to work in conservation areas; the latter has been developed for use in the Midlands and the North of England where they will blend well with the older type of red bricks.

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Concrete commons



EDENHALL has launched a range of concrete commons bricks from its newly commissioned plant in West Thurrock, Essex. These come in classes three, four and five and are claimed to be totally frost resistant. They can be used in below-dpc situations, even where extremely severe. Selected quality bricks can be supplied for infill work and sulphate resistant cement can be used in the manufacture if required.

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Handmade look-alike



DEVELOPED to simulate some of the appearance of the handmade Restoration Red brick produced in its Deane Green works, Redland has introduced the Wealdmade Restoration Red. It is a four-faced, deep-red brick of the FL quality which will allow the company to meet the consistent demand for a brick of this nature with a handmade appearance. It possesses the strong red colour of bricks found in many of Britain's older cities and historic buildings, together with the texture typical of Redland's Wealdmade range.

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Easy arches



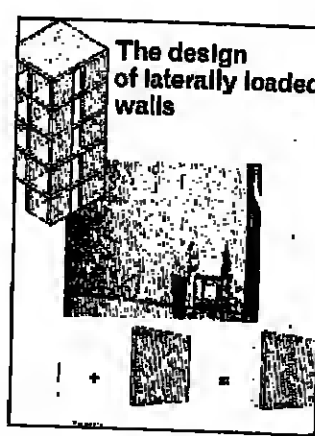
WESTBRICK Segmental Arch sets simplify traditionally difficult features. Both loadbearing and non-loadbearing arches can be tackled, with the assurance that the contractor is guided every step of the way by Westbrick's on-site guidance brochure, which is delivered with every arch consignment. Bricks are individually marked and labelled in packs to ensure that construction is made simple. What is more, variable profiles and spans are supplied, thus allowing the designer complete freedom.

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Loaded walls

LATERALLY-loaded brick walls are the subject of a new 24-page booklet (price £4) prepared by J Morton and published by the Brick Development Association. Based on visual presentations given during a series of seminars of BS 5628: The structural use of masonry: Part 1: Unreinforced masonry, covers both the background to the code provisions and the provisions themselves. Amendments 2747, 3445 and 4800 have been taken into account.

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Technical literature

Etruria facings

MADE from Etruria marl, the Witnecote range of quality facing bricks from Ticon is the subject of a new four-page colour leaflet. As well as illustrating the full-colour range, the leaflet emphasises the two machine-made surface options — smooth and rusticated. In addition, hand rusticated bricks can be supplied to order. All Witnecote bricks conform to BS 3921: 1985 and special shapes to BS 4729: 1971 can be supplied.

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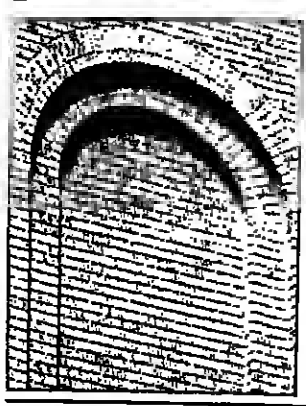
Brick reinforcement

BECAUSE of the increasing interest in reinforced brickwork, the BRC Engineering Company has published a four-page colour brochure dealing with its Stainless Brickforce bed-joint reinforcement and other BRC brickwork products. The brochure describes, with clear drawings, the use of both Brickforce and Bricktor in brick and block masonry. It also contains full technical information and the methods of their supply.

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Brick chart



IN fold-out chart form, Ibstock Building Products has produced its new guide to its extensive range of facing bricks. More than 100 brick types are illustrated, allowing instant comparisons between different colours and textures. Full details can then be sought in Ibstock's catalogue. All bricks illustrated are available in standard moving and stacking products. Manns will also tailor-make special attachments to overcome particular handling problems.

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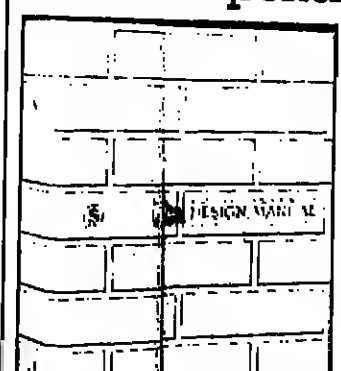
Brick handling



MANNS Mechanical Equipment, a company which specialises in the manufacture of forklift attachments, has published a four-page colour brochure describing its extensive range of brick clamps and the various features they each display. These clamps provide a cost-effective and efficient way of moving and stacking products. Manns will also tailor-make special attachments to overcome particular handling problems.

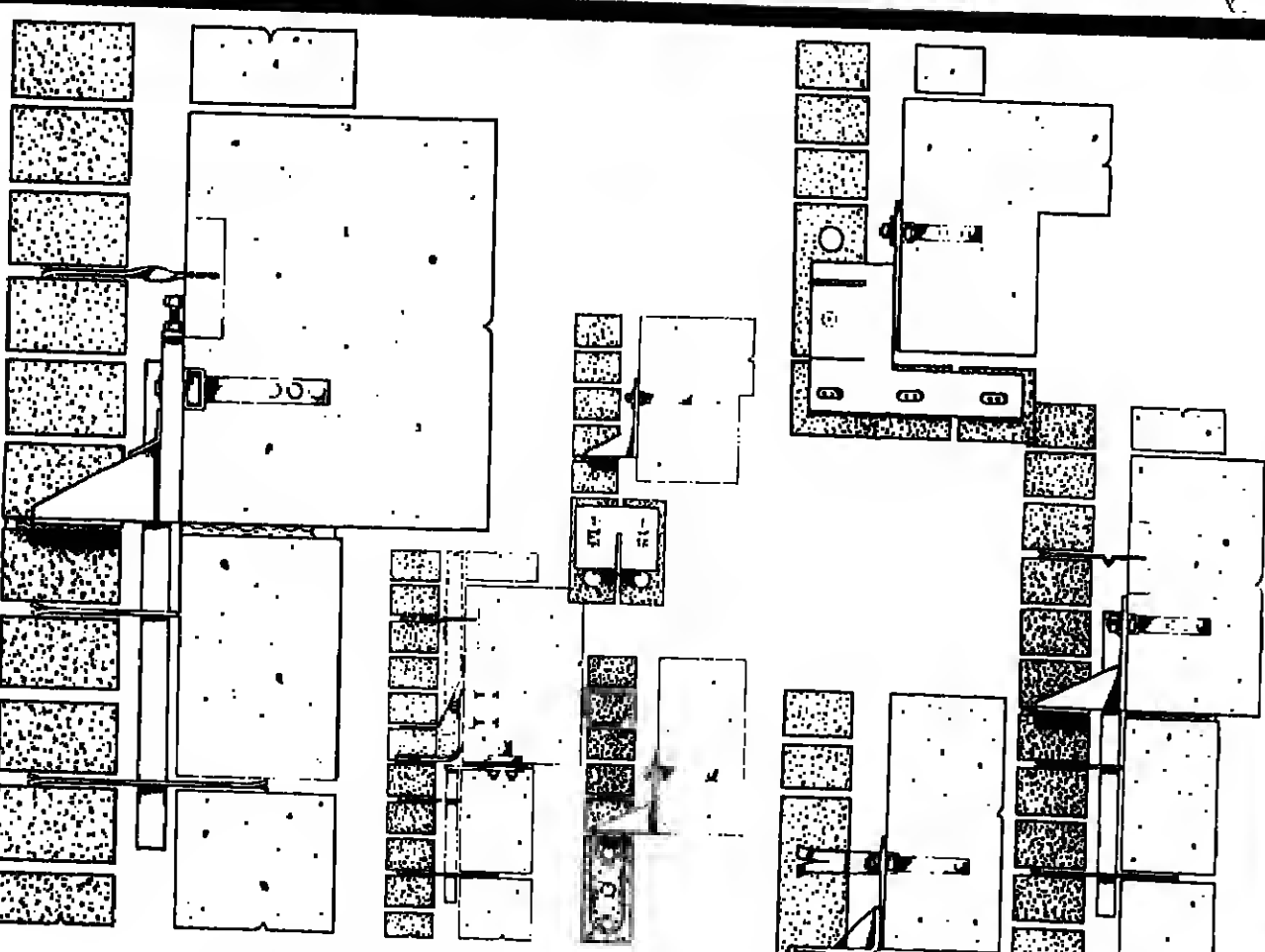
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Brick compendium



IT will be a long time before a brick manual as comprehensive as Steeley Brick & Tile's new publication is produced. Containing full technical details and descriptions of the company's entire product range, the manual also includes brochures covering special brick shapes and other useful aspects of brick design. All are contained in a sturdy ring binder. Note: there is a cover price on this reference book, but copies will be given to key practices, free of charge.

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Wherever you want to hang your bricks Halfen can fix it

When it comes to fixing brickwork, Halfen can give you a choice of safe, secure and economical answers. Because Halfen have the products and expertise to meet your brickwork fixing needs.

Halfen's range of cast-in channel inserts and accessories meets all current requirements. Channels cater for loadings up to 35KN, whilst standard T-head bolts come in sizes up to M30.

To help you match performance with economy, you can specify galvanised mild steel, or two grades of stainless steel — hot or cold rolled. Whatever you specify,

you have the assurance that Halfen channels are independently tested and that quoted performance figures allow wide margins for safety.

Standard components are delivered ex-stock whilst specials are fabricated to customer requirements. In this way, Halfen ensure that fixings are available when and where needed.

To help you find better ways of fixing, Halfen's Design Advisory Service is freely available. Brickwork fixing starts with our Fixings Handbook. Ask for a copy now.

You can rely on Halfen for support



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Technical literature

Code analysed

FOLLOWING the revision of BS 3921, the Brick Development Association has published a four-page summary of the differences between the 1974 and 1985 editions. While the comparison is not exhaustive, it highlights all significant changes. As a quick over-view of the changes this document is extremely valuable, particularly in explaining the new durability classifications for bricks introduced during the revision.

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Brick pavers

FLEXIBLE clay and calcium silicate paving is the subject of the Brick Development Association's Design Note No 9. This 12-page booklet is a revision of Design Note No 5 and covers brick paving in all its aspects from simple domestic patios to heavy duty applications, such as in bus stations and on industrial sites. It contains details which cover both the design and the laying of these pavings.

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New data sheets

BLOCKLEYS has added a number of new data sheets to its product binder during the last few months. These include nine new sheets covering the Heritage collection which, although machine-made, have the appearance of handmade bricks. Colours range from fawn, through a series of brindles to deep red. The other new data sheet concerns Blockleys' new Ironbridge brick.

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Domestic brickwork

IBSTOCK Building Products' well-respected Brickwork Design Magazine, July edition, concerned itself with domestic architecture. Containing a selection of interesting housing projects, this 24-page magazine is packed with excellent photographs of good brickwork and clear detail drawings.

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Brick bulletin

THE latest edition of the BDA's Brick Bulletin features the winning entry of the Quality Brickwork Awards 1986 and the winners of the Scottish Building Awards 1986. This edition contains an article on the new offices for WD-40 Company, featured in last year's BD Brick Supplement.

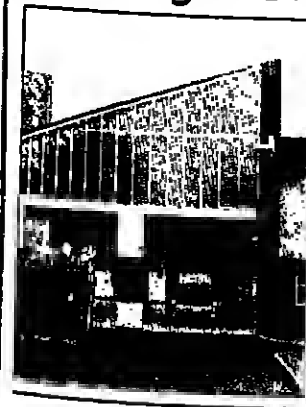
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Winter bricklaying

BDA has published its third Building Note, entitled Bricklaying in winter conditions, this four-page publication gives clear and concise recommendations on working in inclement conditions. It covers mortar mixes, precautions to be taken with the materials used and the way work should be protected. The note ends with a check list of do's and don'ts.

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Brick engineering



OPENING its new Engineers File Notes series, the Brick Development Association has published Note 1. This is a case study, entitled Post-tension brickwork at Rushden Fire Station, and is an eight-page appraisal, complete with detail drawings, showing how the use of a post-tensioned brick wall has resulted in a most economic building. The note is written by structural engineer L N Allen, and future titles in the series are expected before the end of the year.

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Soft mud bricks

SEVERN aluvium clay is used by the Severn Valley Brick Company for the manufacture of its 11 sandstock facings. These are all illustrated in the current catalogue, together with application shots. In a pocket at the back of the brochure are two interesting details which explain in some detail how these particular bricks are produced. Most of these bricks are machine-made, but the range has recently been enlarged by the introduction of a handmade facing — the Worcester Buff Sandstock.

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Engineering bricks

EDENHALL Concrete Products has issued a two-page technical bulletin concerning its Agrement-certified, engineering quality concrete bricks. Relevant sections from the appropriate British Standards, BRE Digests and the Specification for the Water Industry, 2nd Edition are quoted.

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Literature pack

NOTTINGHAM Brick has introduced a new pack of leaflets covering its Mercla and Maltby facing brick ranges. Also contained in the pack is a leaflet accompanying the relaunch of the company's Mercla Ivorys range and the launch of its Dorset Sandlight golden, through-coloured brick. A further leaflet, Concept to conclusion — The Scottish story, shows how successful Nottingham Brick has been north of the border.

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FIVE SCHEMES were commended in this year's Brick Development Association awards. One of them was International House, World Trade Centre, St Katharine's by the Tower, London. "... the result of the endeavours of the architects, builders and brickmakers is a building which is crisp and very appropriate in scale, fenestration and detail ..."

Brickmaker — Rudgwick Brickworks Company Limited



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SINCE the turn of the century, Rudgwick Brickworks has been producing bricks of the highest quality at a sensible price. The Red Multi and Sea Sand ranges of facing bricks are fully complemented by our extensive selection of standard specials, briquettes, purpose-made and hand-made specials.

To find out about Rudgwick bricks, phone or write to Len Forster for our colour information packages.

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